

BY ARTHUR LOVERIDGE

With the single exception of an uncritical key to the species published by Werner (1910b, pp. 37-42), no attempt has been made to evaluate the fifty African species of this family which have been described during the fifty-five years that have elapsed since the treatment of the family in Boulenger's (1885e, p. 430) monumental "Catalogue of Lizards in the British Museum". In this work will be found an extensive review of the principal characteristics of the family which it has not been deemed necessary to republish here.

For the purposes of the present revision I have made full use of the material in the Museum of Comparative Zoölogy, Cambridge, Massachusetts, and take this opportunity of thanking Professor O. Arcangeli (Università di Torino), Dr. E. R. Dunn (Academy of Natural Sciences, Philadelphia), V. FitzSimons (Transvaal Museum), Mr. P. de Grys (Hamburg Museum), Mr. H. W. Parker (British Museum Natural History), and Dr. G. de Witte (Royal Museum Brussels) for their kindness in answering questions regarding types in their charge, as well as for lending specimens of doubtful status.

Quite naturally curators have hesitated to lend types which would, if lost in the post, be impossible to replace. Unfortunately these amphisbaenids, on account of their mode of life, are, with the exception of a few species, still very rare in collections. This will be seen from the fact that more than thirty of those species recognized here are still known only from the type or type series. A compensating factor, however, is that almost all the species described during the past half-century have been adequately figured.

My method of approach, therefore, has been to study the largest available series of a single species from one locality. From the resultant data it has been possible to deduce with a reasonable degree of accuracy the probable range of variation within a species of that particular genus. It becomes evident that these creatures are subject to a greater degree of variability than hitherto has been supposed. Their progressive specialization has led to reduction in head shields by fusion, yet even in so important a character as the presence of only one or two shields covering the head we find it breaking down in the case of *Monopectis guentheri* and *capensis*, of which individuals with either one or two shields occur in the same locality.

While doubtless many species remain to be discovered and described, it is equally probable that several of those now recognized will

eventually find their way into the synonymy when more abundant material is available for study. It seems almost certain, for example, that *Monopeltis anchietae* will have to be united with *M. c. capensis*. I have endeavoured to maintain a conservative attitude, however, and have given particular attention to the geographical probabilities before synonymizing any species. Even so, for reasons stated in their appropriate place, I have found the undermentioned genera and species untenable.

<i>Chirindia</i> Boulenger, 1907	= <i>Amphisbaena</i> Linné, 1758.
<i>Amphisbaenula</i> Sternfeld, 1911	= <i>Amphisbaena</i> Linné, 1758.
<i>Trogonophis wiegmanni maroccana</i> Werner	= <i>T. wiegmanni</i> Kaup.
<i>Agamodon a. immaculatus</i> Calabresi	= <i>A. compressus</i> Mocquard.
<i>Amphisbaena petersii</i> Boulenger	= <i>A. leucura</i> Duméril & Bibron.
<i>Amphisbaena ambuellensis</i> Monard	= ? <i>A. q. quadrifrons</i> Peters.
<i>Geocalamus noltei</i> Boettger	= <i>G. acutus</i> Sternfeld.
<i>Monopeltis leonhardi</i> Werner	= <i>M. anchietae</i> (Bocage).
<i>Monopeltis quadriscutata</i> Werner	= <i>M. anchietae</i> (Bocage).
<i>Monopeltis okavangensis</i> Monard	= <i>M. anchietae</i> (Bocage).
<i>Monopeltis devisi</i> Monard	= <i>M. anchietae</i> (Bocage).
<i>Lepidosternon magnipartitum</i> Strauch	= <i>M. galeata</i> (Hallowell).
<i>Monopeltis unirostralis</i> Mocquard	= <i>M. galeata</i> (Hallowell).
<i>Monopeltis boreei</i> Mocquard	= <i>M. galeata</i> (Hallowell).
<i>Monopeltis boulengeri</i> Boettger	= <i>M. guentheri</i> Boulenger.
<i>Monopeltis truncata</i> Witte	= <i>Dalophia gigantea</i> (Peracca).
<i>Monopeltis granti</i> Boulenger	= <i>Dalophia pistillum</i> (Boettger).
<i>Monopeltis colobura</i> Boulenger	= <i>D. pistillum</i> (Boettger).
<i>Monopeltis g. transvaalensis</i> FitzSimons	= <i>D. pistillum</i> (Boettger).
<i>Monopeltis mossambica</i> Cott	= <i>D. pistillum</i> (Boettger).
<i>Monopeltis granti kuanyamarum</i> Monard	= <i>D. pistillum</i> (Boettger).

Taxonomic changes. Other changes involved include the revival of *Dalophia* for those members of a natural group within *Monopeltis* possessing truncated tails.

The application of the name *capensis* Thomassinot to the eastern race of *Amphisbaena quadrifrons* Peters, now recognized for the first time.

The description of a new species of *Amphisbaena* (of the *Chirindia* group) from southeastern Tanganyika Territory, and a new *Placogaster* from Sierra Leone.

The following remarks may help to clarify the procedure adopted.

Citations. In the case of family or genera, citations are restricted to the original appearance of a newly proposed name and its African

synonyms. In the case of species the reference is given in full for new names only, while, with a view to curtailing printing, an abbreviated form of reference is given to titles which will be found in full in the Bibliography at the end of this paper. Though nearly 1,500 papers on African herpetology have been searched for references to amphisbaenids, mention was found only in 208. Doubtless some must have been overlooked, but these cannot be numerous and are likely to be confined chiefly to the North African genera *Trogonophis* and *Blanus*. The Senegal records contained in Rochebrune's, 1884, "Faune de la Sénégalie." have been omitted intentionally: not only on account of no one else having found amphisbaenids in Senegal, but because of the improbability of many of the species cited occurring within a thousand miles of Senegal!

Descriptions. These are not transcribed from Boulenger or *verbatim* from the original descriptions. They have been entirely rewritten on a uniform basis and embody all the reliable variations recorded by subsequent writers. This point is important, for owing to the fusion of head shields, more particularly in the genus *Amphisbaena*, nomenclatorial confusions have resulted, so that the homologous shield in two closely related species has been differently designated by different authors. Even Boulenger himself erred occasionally, for example the frontal is usually an azygous shield lying between and slightly in advance of the oculars and followed by a pair of postfrontals. In those species where the frontal has disappeared through fusion, however, he calls the postfrontals "a pair of frontals", while the shields hitherto regarded as parietals become "postfrontals". Again in describing *Chirindia*, being based on the most extreme example of reduction in shields, it was very natural that some confusion in terminology should arise, for it is only since the subsequent discovery of *cwerbecki*, *orientalis* and *bushbyi* that it has been possible to trace the successive stages of what has occurred. We find that the temporals first approach, (*orientalis*), then meet in a point (*bushbyi*), and finally form a broad suture (*swynnertoni*) on the median line between the postfrontals and the parietals!

Dentition. Remarks by recent authors appear to indicate that the dentition of a given species may be subject to some variation so that it is not quite so diagnostic of a species as was originally supposed. Ultimately it may be found desirable to give the range of teeth under the generic, rather than the specific diagnoses. Owing to the difficulty of examining the teeth without damaging the type, few recent authors have given the dental formula for their new species. In this revision,

therefore, I have quoted the formulae given by Boulenger, only augmenting or altering them when additions or corrections have appeared in the literature, except in the case of the new species (*rondoensis*) here described and that of its nearest ally.

Measurements. The total length of the largest recorded specimen is given. This is followed by the length of head and body plus that of tail of the same individual.

Sexual dimorphism. In the genus *Agamodon*, dimorphism has been alleged to take the form of absence of preanal pores in the females, this certainly appears to be the case with the *Chirindia* group of *Amphisbaena*. The point might be checked in the genus *Monopeltis* where the presence or absence of pores is common to so many species.

Breeding. Except in the case of *Trogonophis wiegmanni*, *Dalophia pistillum*, and the present note on *Amphisbaena ewerbecki*, nothing appears to have been recorded!

Diets. The few statements made are, for the most part, vague.

Parasites. I have failed to locate mention of any except for *Trogonophis*.

Enemies. Known only for *Amphisbaena swynnertoni*, *Geocalamus modestus*, and *Dalophia pistillum*.

Distribution. Under this heading the political areas have been arranged on a definite geographical plan, the place names, however, are arranged alphabetically within the political area in which they occur.

Illustrations. I am indebted to the skill of Mr. E. N. Fischer for drawings of the six East African species which have not been figured satisfactorily before, and to Mr. George Nelson for the excellent photographs of original figures. These have been enlarged, or reduced, to a uniform size—the smallest commensurate with clearness—so that they are not to scale, nor is it possible to state the scale in many cases as it was not stated in the original.

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* An asterisk signifies that there are examples in the Museum of Comparative Zoölogy.

Family AMPHISBAENIDAE

1825. Amphisbaenidae Gray, Ann. Philos. (2), 10, p. 203.

1844. Trogonophidae Gray, Cat. Tort. Brit. Mus., p. 68.

For further family and generic citations see Boulenger (1885e, p. 430) from whom the following definition is adapted.

Habit vermiform in adaptation to a subterranean existence; head covered with symmetrical plates or shields; eyes concealed beneath the skin; mouth small, frequently inferior; teeth large, few, anchylosed to the upper (Emphyodontes) or inner (Prosphyodontes) edge of the jaws, premaxillary teeth usually in odd number, pterygoid teeth absent; tongue moderate, elongate, arrow-headed, covered with imbricate scale-like papillae, terminating in two long, narrow, smooth points; ear absent; skin divided into soft squarish segments forming regular annuli; tail usually short.

Skull thick, strongly ossified, no interorbital septum; no columella cranii; no postorbital and no frontosquamosal arches; no epipterygoids; premaxillary single; nasals paired; frontals paired; parietal single, very large; quadratum very oblique or nearly horizontal, owing to the shortness of the post-coronoid part of the mandible; occipital condyle frequently divided. Vertebrae numerous, depressed, all except the foremost without spinose processes; pectoral and pelvic arches rudimentary. No osteoderms.

Range. South America northwards to Florida (see remarks); Africa and the Mediterranean region.

Remarks. As originally proposed by Gray (1825, p. 203) the Amphisbaenidae were regarded as limbless. If the American *Bipes* (syn. *Chirotos*), which he (1844, p. 74) relegated to a separate family (*Chirotidae*), be included, then the range is to southern Lower California and the definition of the family requires some alteration. Boulenger (1885e, p. 430) combined both limbed and limbless forms in Amphisbaenidae.

Camp (1923, p. 316) places the family in a superfamily Amphisbaenoidea of the section Scincomorpha, division Autarchoglossa of the suborder Sauria. Here they follow the Teiidae, as in Boulenger, but terminate the section instead of preceding the Lacertidae.

Synopsis of the Genera

- I. Segments of the pectoral region not differentiated.
- A. More than 40 segments in a midbody annulus.
1. Rostral not enormous, nor strongly compressed with arched cutting edge.
 - a. No azygous frontal; no preanal pores *Trogonophis*
(p. 359)
 - b. An azygous frontal.
 - A pair of large prefrontals *Pachycalamus*
(p. 364)
 - No prefrontals *Agamodon*
(p. 365)
 2. Rostral enormous, strongly compressed with arched cutting edge *Baikia* (part)
(p. 368)
- B. Less than 40 segments in a midbody annulus.
1. Rostral enormous, strongly compressed with arched cutting edge *Baikia* (part)
(p. 368)
 2. Rostral not enormous, nor strongly compressed with arched cutting edge.
 - a. Less than 150 annular rings from head to anus *Blanus*
(p. 371)
 - b. More than 150 annular rings from head to anus.
 - Median ventral segments not more than three times as broad as long *Amphisbaena*
(p. 373)
 - Median ventral segment six times as broad as long . . . *Placogaster*
(p. 399)
- II. Segments of the pectoral region more or less enlarged, or forming an angular series.
- A. Snout strongly compressed; tail bluntly rounded *Geocalamus*
(p. 401)
- B. Snout depressed.
1. Tail bluntly rounded; preanal pores present or absent . . . *Monopeltis*
(p. 405)
 2. Tail abruptly truncate, ending in a callous pad; preanal pores absent *Dalophia*
(p. 428)

Genus TROGONOPHIS

1830. *Trogonophis* Kaup, Isis von Oken, 23, col. 880 (type *wiegmanni*).

Head slightly compressed, snout rounded; nostril lateral, pierced in a large nasal; no gular fold; a vertebral line, a stronger lateral line,

no ventral line; pectoral segments not enlarged; no praeanal pores; tail conical, pointed. Teeth anchylosed to the parapet of the jaws.

Range. Northwest Africa.

TROGONOPHIS WIEGMANNI Kaup

1830. *Trogonophis Wiegmanni* Kaup, Isis von Oken, **23**, col. 880, pl. viii, fig. i: No locality.
1831. Férussac, p. 203.
1839. Duméril & Bibron, p. 469.
1844. Gray, p. 68.
1848. Gervais, p. 205.
1850. Guichenot, p. 16.
1851. Eichwald, p. 438.
1853. Gervais, p. 308.
- 1862b. Strauch, p. 47.
1865. Gray, p. 445.
1867. Lallemand, p. 26.
- 1867a. Steindachner, p. 55.
1872. Gray, p. 33.
1873. Gray, p. 114.
1878. Müller, p. 622.
- 1881f. Boettger, p. 146.
1881. Strauch, pp. 373, 476.
- 1883a. Boettger, p. 108.
- 1885b. Boettger, p. 466.
- 1885e. Boulenger, p. 470.
- 1887a. Boulenger, p. 508.
- 1889b. Boulenger, p. 303.
1889. Fischer, p. 49.
- 1891c. Boulenger, pp. 96, 122.
1892. Anderson, p. 12.
- 1893a. Boettger, p. 78.
1894. Olivier, p. 117.
- 1896b. Olivier, p. 122.
1898. Jeude, p. 24.
1900. Doumergue, p. 346, pl. xix, fig. 5a.
- 1901b. Doumergue, p. 244, pl. xix, fig. 5a (reprint of 1900).
1903. Mayet, p. 21.
- 1905g. Boulenger, p. 73.
1905. Rosón, p. 138.
1906. Barbier, p. 64.
1907. Le Cerf, p. 23.
1908. Zulueta, p. 454.
- 1909a. Zulueta, p. 354.
- 1912a. Pellegrin, p. 256.

- 1912b. Pellegrin, p. 263.
 1916e. Chabanaud, p. 461.
 1917. Maluquer, p. 430.
 1920c. Chabanaud, p. 461.
 1925b. Flower, p. 949.
 1926a. Pellegrin, p. 316.
 1926f. Pellegrin, p. 160.
 1927a. Pellegrin, p. 262.
 1929b. Werner, pp. 9, 23.
 1935. Hediger, p. 11, fig. 2.
 1835. *Amphisbaena elegans* Gervais, ? 1836, Bull. Soc. Sci. Nat. France, p. 113: Algeria; Tangier; and Zafarin Islands.
 1836. Gervais, p. 311.
 1837. Gervais, p. 3, cl. iii, pl. xi.
 1841. *Amphisbaena Wiegmanni* Schlegel, p. 122, pl. vi.
 1931c. *Trogonophis Wiegmanni maroccana* Werner, Sitz. Akad. Wiss. Wien, **140**, **1**, p. 280: Chella, near Rabat, French Morocco.
 1935. Laurent, p. 347.

Native names. *Bou Sih'at* (Arabic, Oran); *tepha* (in error, see under Folklore).



Fig. 1. *Trogonophis wiegmanni* (Type of *elegans* after Gervais).

Description. Rostral large, pentagonal, its posterior angle inserted between the nasals; nasal entire, forming a suture with its fellow behind the rostral; a pair of large prefrontals; no frontal; a pair of postfrontals; a pair of small parietals; a pair of occipitals, large, or scarcely differentiated from the adjacent segments of the first annulus, or absent; loreal usually separated from, sometimes in contact with, the ocular; ocular moderate, surrounded by 5-8 plates (some of which may be termed supra-, pre-, infra-, sub- and postoculars) sometimes including loreal and prefrontal; no well-defined temporals; 4-5 upper labials, third largest; mental large, subpentagonal; 3-5 lower labials, second usually largest; postmental triangular, its apex in contact with that of a triangular chin shield, or separated from the latter by a

suture of the anterior pair of large sublabials; 2 pairs of sublabials; 135-156 annuli on body, 12-15 on tail; 48-64 (22-32 + 25-34) segments in a midbody annulus, the median ventral rows undifferentiated; 6-10 anals; 0 preanal pores.

Dentition. Premaxillary teeth 5; maxillaries 4-4; mandibulars 8-8.

Coloration. Very variable. Above and below greyish white chequered with purplish brown; or dorsum glossy brown chequered with darker brown, and belly yellow or white, chequered with brown; or uniform fuliginous grey, a little lighter below.

Measurements. Total length 259 (240 + 19) mm.

Sexual dimorphism. According to Doumergue, the tail of the male is slightly flattened below and exhibits a faint longitudinal depression, that of the female is rounded.

Breeding. At 9 a.m. on June 10, Doumergue (1901, p. 246) found two adults intertwined and moving over each other, though not actually copulating, on the surface of the sand into which they burrowed, reappearing later. In September, Hediger (1935, p. 11) confined a specimen from Rabat in a collecting bag in which it gave birth to five young, one of these was still attached to a large yolk-mass and coiled in a membranous sac some thirty millimetres in length, others were fully formed, the largest 69 mm. in length.

Longevity. One was a year in captivity in Vienna. Fischer states that they are hardy in captivity but uninteresting as they remain out of sight so much, though poking their heads out of the ground at night. He suggests that they should be shipped in damp moss or earth in tins, and emphasizes the necessity of keeping the soil in their vivarium damp.

Diet. According to Fischer they feed well on mealworms (*Alphitobius diaperinus*) and larvae of *Gnathocercus cornutus* in captivity. In a wild state they live upon small beetles, ants, slugs, earthworms and such other creatures as are to be found beneath the stones where they dwell.

Parasites. Mites and ticks; while proglottides of a tapeworm have been found in the excrement according to Fischer.

Defence. If disturbed when wandering on the surface, *Trogonophis* rolls itself into a stiff spiral, only uncoiling when attempting to burrow; if uncovered by removal of a stone its instinct is to seek shelter by burrowing.

Temperament. Of a gentle disposition, occasionally extruding its tongue, if picked up this amphisbaenid will twine about the fingers of the hand which holds it.

Habitat. Though recorded from Mogador as late as December 6, these amphisbaenids hibernate during December and January, emerging in February; they are plentiful in May, June and July. They prefer damp ground rich in humus in which they make deep winding burrows. During cool weather they may be found lying beneath stones on the surface. When the sun is powerful, and the surface soil begins to lose its humidity, they burrow to a depth of at least six inches. They emerge during rainstorms while extensive flooding drives many to the surface. Fischer thinks that they are crepuscular or nocturnal.

Distribution. **Tangiers:** Tanger. **Spanish Morocco:** Larache; Mellila; Tetuan; Tifazor; Zafarin Island. **French Morocco:** Agadir; Azimour; Berguent; Casablanca; Chella; Dar Anflous; Djebel Taghat; Dradek; El Aioun; Fedala; Fenzou; Fez; Fort Gurgens; Guercif; Imi n'Tanout; Koreina; La California; La Chiffa; Maidnet; Mogador; Oued Akrench; Oued n'Fis; Rabat; Sale; Sidi Abd el Djellil; Sidi Ali; Sisi Slimani; Tamaruth Valley; Taourirt; Uezzan. **Algeria:** Ain el Hadjar; Ain Temouchent; Alger; Arzeu; Batna; Batterie espagnole; Biskra; Blidah; Bone; Budshia; Cap Matifu; Djebel Mourdjadjo; Hamman Meskoutine; Hussein Dey; La Calle; Laghouat; Maison Carree; Mecheria; Oran; Polygone; Rachgoun Island; Sebdu; Sidi Douma; Tiemeen. **Tunisia:** Tamesmida.

Folklore. Many Arabs believe *Trogonophis* to be the young of the horned viper (*Cerastes cornutus*), calling it 'tepha', the common name for the viper. They fear the violet-brown phase as being the most poisonous, attributing blindness, distended stomachs and other maladies to its bite, despite the fact that the small gape would prevent its biting effectually. One colonial engineer found many Arabs refusing to cultivate land that was infested with *Trogonophis*. Both Arabs and settlers are apt to kill it on sight (Fischer, 1889).

Remarks. The color form *maroccana*, of which the Museum of Comparative Zoölogy possesses the type and paratypes, was described on the assumption that *wiegmanni* was based on an Algerian variety, a somewhat doubtful point. Under any circumstances the name *elegans* would take precedence over *maroccana* for Gervais figures the form described by Werner, while one of his types came from Tangier, relatively not far distant from Werner's type locality, Chella. There appears, however, to be no geographical significance in the occurrence of the forms for Werner, himself, took both near Oran. See also Hedi-ger's (1937, p. 188) remarks on an Uezzan specimen.

Genus PACHYCALAMUS

1881. *Pachycalamus* Günther, Proc. Zool. Soc. London, p. 461 (type *brevis*).

Head strongly depressed, snout rounded; nostril inferior, between two small nasals; no gular fold; no vertebral line, no lateral line, a ventral line; pectoral segments not enlarged; praeanal pores; tail slightly depressed, obtusely pointed. Teeth anchylosed to the parapet of the jaws.

Range. Socotra Island, Indian Ocean.

PACHYCALAMUS BREVIS Günther

1881. *Pachycalamus brevis* Günther, Proc. Zool. Soc. London, p. 462, figs.:
Socotra Island.

1882b. Peters, p. 46.

1883. Taschenberg, p. 168.

1885e. Boulenger, p. 471.

1885b. Müller, p. 171.

1903a. Boulenger, p. 84.

1903. Steindachner, p. 12.

1910b. Werner, p. 42.

Description. Rostral large, trapezoid, its posterior border broadest, straight; nasal divided, between rostral, first and second labial, pre-

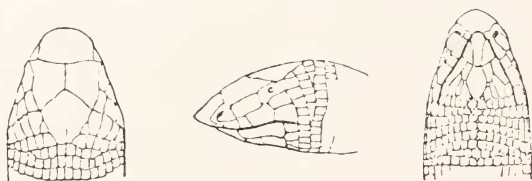


Fig. 2. *Pachycalamus brevis* (Type after Günther).

ocular and prefrontal; a pair of large prefrontals; a large frontal, angular anteriorly; no postfrontals, parietals or well-differentiated occipitals; no supraocular; preocular elongate; ocular moderate, in contact with preocular, prefrontal, frontal (narrowly), two temporals, subocular, and anteriorly with fourth labial; eye distinct; 5 upper labials, first very small, fourth and fifth largest; mental elongate; 3 lower labials, first small, second largest; postmental separating two anterior chin shields which are followed by a posterior row of 6 chin

shields; 165-173 annuli on body, 19-20 on tail; 48-50 segments in a midbody annulus, uninterrupted except by ventral groove, the median ventral rows undifferentiated; 6-8 anals; 4 preanal pores.

Dentition. Premaxillary teeth 3; maxillaries 3-3; mandibulars 6-6.

Coloration. Above, brown, except head which is yellowish white; below, uniform yellowish white.

Measurements. Total length 213 (198 + 15) mm.

Habitat. Found beneath stones, from sea level to an altitude of about 2,000 feet. Easily captured.

Distribution. **Socotra Island:** Hadibu Plain: Dahamis and Homhil; Haggier Mountain; Jena-agahan; Tamarida. (Known from the six cotypes in the British Museum, besides numerous other specimens).

Genus AGAMODON

1882b. *Agamodon* Peters, Mitth. Sitz. Akad. Wiss. Berlin, p. 322 (type *anguliceps*).

Head strongly depressed, snout projecting, truncate; nostril lateral in a moderate nasal; no gular fold; a vertebral line, no lateral line, a ventral line; median dorsal and ventral segments roundish, scale-like; pectoral segments not differentiated; preanal pores present or absent; tail compressed, pointed. Teeth ankylosed to the parapet of the jaws.

Range. Italian Somaliland and Arabia.

Synopsis of the Species

- 123-137 annuli on body, 15-19 on tail; 0, 2, 4 or 6 preanal pores *anguliceps*
(p. 365)
- 143-160 annuli on body, 18-23 on tail; 0 or 2 preanal pores *compressus*
(p. 367)
- 161 annuli on body, 18 on tail; 0 preanal pores (only known from type) . *arabicus*
(Arabia)

AGAMODON ANGULICEPS Peters

- 1882c. *Agamodon anguliceps* Peters, Mitth. Sitz. Akad. Wiss. Berlin, p. 322, pl. ix: Brava, Italian Somaliland.
1888. Mocquard, p. 120.
- 1890d. Boulenger, p. 79.
- 1893b. Boettger, p. 132.
- 1897g. Boulenger, p. 278.
- 1897i. Boulenger, p. 17.
- 1898a. Boulenger, p. 717.

- 1898c. Boulenger, p. 916.
 1909c. Boulenger, p. 308.
 1910b. Werner, p. 42.
 1913. Lönnberg & Andersson, p. 2.
 1915. Calabresi, p. 239.
 1927. Calabresi, pp. 27, 44.
 1929c. Scortecci, p. 255.
 1931b. Scortecci, p. 144.

Description. Rostral large, trapezoid, its posterior border largest, straight, forming a long suture with the large quadrangular frontal which covers the whole upper surface of the head; nasal moderate,

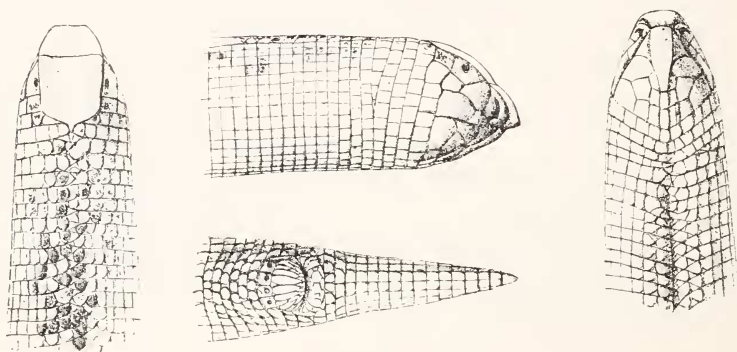


Fig. 3. *Agamodon anguliceps* (Type after Peters).

between rostral, loreal, and three labials; no prefrontals, postfrontals, parietals or occipitals; no supraoculars; ocular moderate, eye distinct; subocular small; four superimposed scales which might be termed temporals; 3-4 upper labials, first very small (said to be fused with the nasal in the type), fourth very large; mental narrow, elongate; 3-4 lower labials, third largest; chin shields small, irregular; no sublabials; 127-137 annuli on body, 15-19 on tail; about 40 segments in a midbody annulus but dorsal and ventral rows strongly differentiated from the lateral segments; 7-10 anals; 2-6 preanal pores, usually 4 in males, absent in females.

Dentition. Premaxillary teeth 3; maxillaries 2-2; mandibulars 5-5.

Skeleton. The skull has been figured and described by Peters (1882c, p. 324, pl. ix).

Coloration. Above yellowish white, back with irregular black or

dark maroon spots which may coalesce to form an interrupted longitudinal line; below immaculate.

Measurements. Total length 186 (170 + 16) mm.

Distribution. **Italian Somaliland:** Alessandra; Brava; Chisimayu Jumbo; Mahaddei; Mofi; Mogadish.

AGAMODON COMPRESSUS Mocquard

1888. *Agamodon compressum* Mocquard, Mem. Soc. Philom. Cent., p. 121, pl. xi, figs. 2-2c: Somaliland.
 1893b. Boettger, p. 132.
 1897g. Boulenger, p. 278.
 1897i. Boulenger, p. 17.
 1910b. Werner, p. 42.
 1915. Calabresi, p. 240.
 1927. Calabresi, p. 44.
 1927. *Agamodon anguliceps immaculatus* Calabresi, Atti, Soc. Ital. Sci. Nat. Milano, **66**, pp. 27, 44: Afghedud, Italian Somaliland.

Description. Agrees with *anguliceps* in most respects, apparently differing in its more strongly compressed body, the greater develop-

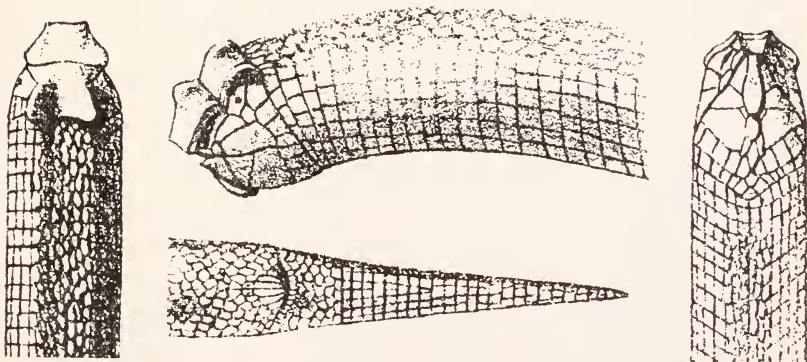


Fig. 4. *Agamodon compressus* (Type after Mocquard).

ment of the cephalic shields whose lateral edges are upturned to form outward and obliquely backward-directed crests; 3-4 upper labials; 3-4 lower labials; 143-160 annuli on body, 18-23 on tail; vertebral line strongly grooved; 8 anals; 2 preanal pores in males, absent in females.

Coloration. Above uniform yellow ochre, or ashy grey becoming yellowish white posteriorly on body and tail, unspotted; below immaculate.

Measurements. Total length 111 (99 + 12) mm. for type of *immaculatus*; 103 (90.5 + 12.5) mm. for type of *compressus*.

Sexual dimorphism. Preanal pores are believed to be present in the males only.

Distribution. **Italian Somaliland:** Afghedud; Brava; Mogadish.

Remarks. Mocquard had seven males and two females of *anguliceps* in the same collection from which he described the holotype of *compressus*. If pores are only present in males, then the type of *compressus*, which had two, was a male. Calabresi states that her type of *immaculatus* was a male with two pores, her Mogadish example of *compressus* a female with none. No mention being made of pores, it seems probable that the Brava specimen mentioned by Boulenger was also a female. The fact that both species occur together at Brava and Mogadish, eliminates the possibility of subspecific treatment. *Agamodon arabicus* Anderson (1901, p. 140), of which the British Museum has received no second example up to the time of writing (1937), is very closely related to *compressus*.

Genus BAIKIA

1865. *Baikia* Gray, Proc. Zool. Soc. London, p. 450 (type *africana*).

Head strongly compressed, snout vertically wedge-shaped, arched; nostril lateral, pierced in a large rostral with a cutting edge; a circular fold separating head from body; no vertebral line, a lateral line, no ventral line; pectoral segments not enlarged; preanal pores; tail cylindrical, obtuse. Teeth supposedly anchylosed to the sides of the jaws.

Range. Africa north of the equator.

Remarks. *Anops* Bell, 1833 (type species *kingii* Duméril & Bibron), to which Boulenger (1885e, p. 452) referred *africana*, is preoccupied for reptiles by *Anops* Oken, 1815, proposed for crustacea. Thus *Baikia* becomes the correct name for the genus of African amphibaenids even though the South American *kingii* is considered congeneric. Stejneger (1916, p. 85), however, believing that they will prove generically distinct, has proposed *Anopsibaena* for the latter. *Baikia*, proposed by Gray in 1870 for certain soft-shelled turtles, does not affect the issue.

Synopsis of the Species

- 38 segments in a midbody annulus; 248 annuli on body, 25 on tail (West Africa)
africana
 (p. 369)
- 49-52 segments in a midbody annulus; 197-199 annuli on body, 6-7 on tail
 (East Africa).....*somalica*
 (p. 370)

BAIKIA AFRICANA Gray

1865. *Baikia africana* Gray, Proc. Zool. Soc. London, p. 451, figs. 3-4: West Africa.
1872. Gray, p. 39, figs. 20-21.
1873. Gray, p. 117.
1916. Stejneger, p. 85.
1881. *Amphisbaena africana* Strauch, p. 421.
- 1885e. *Anops africanus* Boulenger, p. 452, pl. xxiii, figs. 4a-4d.
- 1887a. Boulenger, p. 508.
1898. Werner, p. 207.
- 1902c. Tornier, p. 674.
- 1910b. Werner, p. 41.
1919. *Anopsibaena africanus* Schmidt, p. 599.

Description. Rostral enormous, compressed, arched, with sharp cutting edge; nasal fused with rostral anteriorly; no frontal; two pairs

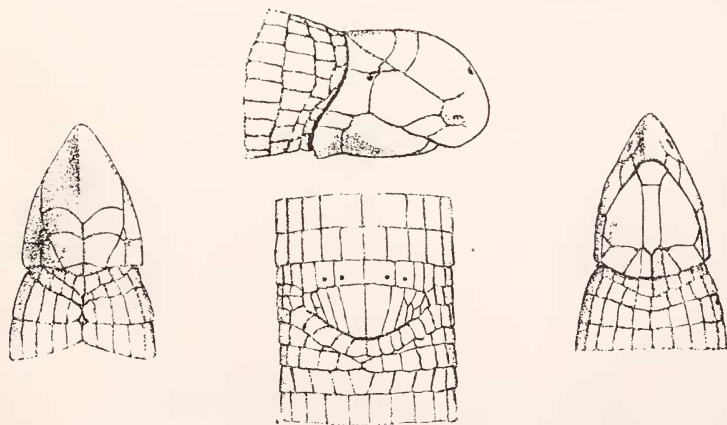


Fig. 5. *Baikia africana* Gray (Type after Boulenger).

of shields behind rostral, *i.e.* a pair of postfrontals and a pair of parietals; postfrontal transversely elongate, below in contact with the

second labial and ocular; no preocular; ocular very small, triangular, in contact with postfrontal, parietal, temporal, second and third labials; eye distinguishable, under the supero-anterior edge of the third labial; 3 upper labials, first small, second largest; mental quadrangular; 2 lower labials, anterior very large, posterior small; postmental elongate; 4 chin shields flanked by a sublateral; 248 annuli on body, 25 on tail; 38 (20 + 18) segments in a midbody annulus, the 2 median ventral segments slightly broader than long, dorsal segments longer than broad; 10 anals; 4 preanal pores.

Coloration. Uniformly flesh coloured.

Measurements. Total length 202 (180 + 22) mm.

Distribution. **West Africa.** (Known only from the type, collected by Dr. Balfour Baikie, in the British Museum).

Remarks. Boulenger (1887a, p. 508) has amended the miscount of body annuli which appeared in the Catalogue of Lizards of 1885.

BAIKIA SOMALICA (Scortecci)

1930c. *Anops somalicus* Scortecci, Boll. Mus. Zool. Torino, **41**, No. 10, p. 6, figs. 1-5: Caitoi, Uebi Scebeli, Italian Somaliland.

Description. Rostral enormous, compressed, arched, with sharp cutting edge; no nasal but its position indicated by a suture, nostril

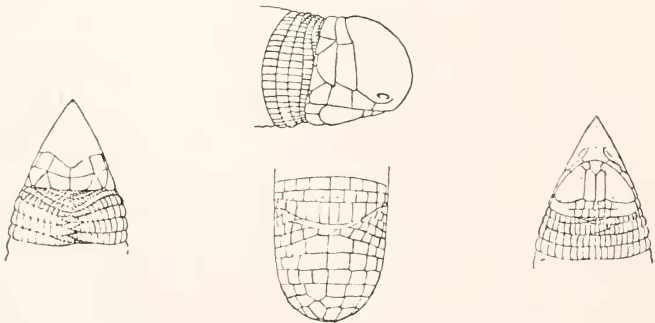


Fig. 6. *Baikia somalica* (Type after Scortecci).

in the rostral; no prefrontal; no frontal; two pairs of shields behind rostral, *i.e.* a pair of postfrontals and a pair of parietals; postfrontal below in contact with preocular and ocular; preocular large, elongate, resting on the first and second labials; ocular large, subtriangular, in

contact with preocular, postfrontal, parietal (even though barely), two temporals, second and third (or second only) labials; eye distinct or hidden; 2 temporals, separated by posterior angle of ocular; 3 upper labials, first small, second largest; mental pentagonal; 3 lower labials, first very small, second very large; a pair of elongate postmentals; 5 chin shields followed by a second row of 6, flanked by a large sublabial in contact with the second and third lower labials; 197-199 annuli on body, 6-7 on tail; 49-52 (27-28 + 22-24) segments in a midbody annulus, the 2 median ventral segments considerably broader than long; dorsal segments longer than broad; 10 anals; 1-2 preanal pores.

Coloration. Above and below, uniformly light rosy grey.

Measurements. Total length 167 (160 + 7) mm.

Distribution. **Italian Somaliland:** Caitoi on the Webi Shebeli (Known only from the type in the Turin Museum, and paratype in the Milan Museum).

Genus BLANUS

1830. *Blanus* Wagler, Natur. Syst. Amphibien, p. 197 (type *cinereus*).

Head moderate or slightly depressed, snout rounded; nostril lateral, pierced in the first upper labial; a circular fold separating head from body; a vertebral line, a distinct lateral line, no ventral line; pectoral segments not enlarged; preanal pores; tail cylindrical, pointed. Teeth ankylosed to the sides of the jaws.

Range. Borders of the Mediterranean.

BLANUS CINEREUS (Vandelli)

1797. *Amphisbaena Cinerea* Vandelli, Mem. Acad. Sci. Lisboa, 1, p. 69: Portugal (restricted).
 1836. Gervais, p. 311.
 1837. Gervais, p. 2, cl. iii, pl. x.
 1841. Schlegel, p. 139.
 1848. Gervais, p. 205.
 1881. Strauch, p. 416.
 1883a. Boettger, p. 109.
 1884. Bedriaga, p. 24, figs. 1-3, pl. iv.
 1824. *Amphisbaena oxyura* Wagler in Spix, Serp. Brasiliensium, p. 72, pl. xxv, fig. 1: Rio de Janeiro, Brazil (error).
 1835. Gervais, p. 112.
 1829. *Amphisbaena rufa* Hemprich, Verh. Ges. Naturf. Freunde Berlin, p. 130: Locality unknown.

1830. *Blanus cinereus* Wagler, p. 197.
 1844. Gray (part), p. 72.
 1853. Gervais, p. 297, pl. xiv, figs. 5-7.
 1867a. Steindachner, p. 53.
 1872. Gray (part), p. 34.
 1873. Gray (part), p. 114.
 1875. Schreiber, p. 334, figs.
 1885e. Boulenger, p. 433.
 1891c. Boulenger, pp. 96, 121.
 1893a. Boettger, p. 76.
 1894. Olivier, p. 117.
 1897. Bateman, p. 148.
 1900. Doumergue, p. 344, pl. xix, figs. 5-5a.
 1901b. Doumergue, p. 242 (reprint of 1900 paper).
 1901. Gadow, p. 566.
 1912. Schrieber, p. 520, fig. 105.
 1916e. Chabanaud, p. 231.
 1926a. Pellegrin, 1925, p. 316.
 1926e. Pellegrin, p. 121.
 1927a. Pellegrin, p. 262.
 1928. Mertens & Müller, p. 27.
 1929b. Werner, pp. 13, 22.
 1931c. Werner, p. 279.
 1935. Hediger, p. 11.
 1936. *Blanus rufus* Wiegmann, p. 157.

(The foregoing bibliography is incomplete with regard to European records).

Description. Rostral moderate, trapezoid, forming a suture with the frontal; no nasal, nostril pierced in the first labial; no prefrontals; a large frontal, about as broad as long; a pair of squarish postfrontals; a pair of squarish parietals; a pair of squarish occipitals; these three rows of paired scales, forming part of annular rings on the head, are subject to azygous subdivisions; no supraocular; no preocular; ocular moderate, eye distinguishable; postocular segment-like; temporals segment-like; 4 upper labials, first largest, fourth smallest; mental trapezoid; 3-4 lower labials, first and fourth smallest; postmental large, in contact with mental and followed by an anterior row of 3-4 chin shields, these by a posterior one of 5-7 shields; head separated from body by a distinct fold; 110-128 annuli on body, 20-42 on tail; 30-34 (12-16 + 16-18) segments in a midbody annulus, the median ventral rows undifferentiated; 4-6 anals, median pair usually enlarged; 3-3, 4-4, or 4-5 preanal pores.

Dentition. Premaxillary teeth 7; maxillaries 4-4; mandibulars 7-7.

Skeleton. The skull has been figured by Gervais (1854, pl. xiv).

Coloration. Above greyish, each segment more or less brown; below as above but with many segments unpigmented.

Measurements. Total length 245 (220 + 25) mm.

Habitat. In Portugal they occur in manure heaps. Gadow found that they soon became dry and contracted on removal from their environment, becoming turgid and supple when returned to moist soil.

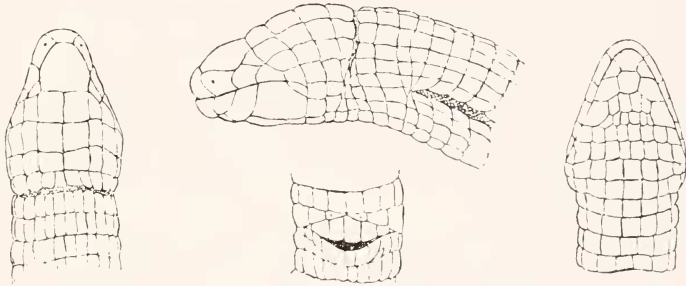


Fig. 7. *Blanus cinereus* (after Schreiber).

Distribution. **Spain.** **Portugal.** **Tangiers:** Tanger. **Spanish Morocco:** Tetuan. **French Morocco:** Ain el Hardjar; Azrou; Djebel Zalagh near Fez; Djebel Zerhoun near Mulay Idris; Boulhaut; Mogador to Marrakesch; Mogador; Oued Ykem; Rabat. **Algeria:** Batna; Tebessa.

Genus AMPHISBAENA

1758. *Amphisbaena* Linné, Syst. Nat. (ed. 10), **1**, p. 229 (type *fuliginosa*).
1844. *Sarea* Gray, Cat. Tortoises Brit. Mus., p. 71 (type *caeca*).
1844. *Cynisca* Gray, Cat. Tort. Brit. Mus., p. 71 (type *leucura*).
1861. *Diphalus* Cope, Proc. Acad. Nat. Sci. Philadelphia, p. 75 (type *fens-tratus*).
1865. *Bronia* Gray, Proc. Zool. Soc. London, p. 448 (type *brasiliana*).
1878. *Ophioproctes* Boulenger, Bull. Soc. Zool. France, **3**, p. 300 (type *liber-ien-sis*).
1885. *Aporarchus* Cope, Proc. American Philos. Soc., **22**, p. 187 (type *pruni-color*).
- 1907g. *Chirindia* Boulenger, Ann. Mag. Nat. Hist. (7), **20**, p. 48 (type *swyn-ner-toni*).
- 1911a. *Amphisbaenula* Sternfeld, Sitz. Ges. Naturf. Freunde Berlin, p. 246 (type *orientalis*).

Head moderate, snout rounded or feebly compressed; nostril lateral, pierced in a nasal which may have fused with other shields; no gular fold; a vertebral line, a lateral line, no ventral line; pectoral segments not enlarged; ventral segments at most not more than three times as broad as long; preanal pores present or absent; tail cylindrical, obtuse. Teeth anchylosed to the sides of the jaws.

Coloration. The coloration of the African species of this genus being substantially the same, *viz.* flesh-pink or pinky mauve in life, or brownish above, paler below in alcohol, it has not been considered necessary to repeat it for each species.

Range. Tropical Africa; Tropical America.

Remarks. According to Cope, *Aporarchus* was supposedly distinguishable only by the absence of preanal pores. Boulenger (1885e, p. 443) found them present, though scarcely discernible, in all his material, as is the case with the dozen examples in the Museum of Comparative Zoölogy.

Chirindia was separated only by the absence of pores (a sexual character in that section) and ocular. This stage of evolution has been reached independently in both west and east and apparently does not represent a natural grouping. Thus we find *schaeferi* of the Cameroon without pores obviously more closely related to *haughi* of the French Congo with pores than to the poreless species in the southeast. Both species, being known only from the types, may represent opposite sexes.

Amphisbaenula was stated by its author to differ from *Chirindia* only by the presence of pores, yet when describing the type species *orientalis*, Sternfield states that pores are sometimes absent in his series!

Amphisbaena, as here understood, furnishes a very delightful sequence of forms undergoing adaptation to a burrowing existence. This specialization takes the form of reduction in head shields by fusion, reduction in the number of segments in a midbody annulus, and reduction, or loss, of pores.

Synopsis of the Species

I. An azygous median frontal and an ocular present.

A. Nasals and prefrontals distinct. *kraussi*
(p. 376)

B. Nasals and prefrontals fused.

First and second upper labials distinct. *leucura*
(p. 377)

First upper labial fused with nasal, second distinct *mülleri*
(p. 379)

First and second upper labials fused with nasal and preocular.

A pair of parietals; a postmental; 24 segments in a midbody annulus; 3-7 preanal pores *leonina*
(p. 379)

Parietals fused with postfrontals; 18 segments in a midbody annulus; 9-11 preanal pores *oligopholis*
(p. 380)

II. No azygous median frontal.

A. Preanal pores 8-10 (except *schaeferi* which has none).

1. Ocular distinct.

No parietals but a pair of occipitals; a postmental; 22-24 segments in a midbody annulus *liberiensis*
(p. 381)

A pair of parietals and occipitals; no post-mental; 16 segments in a midbody annulus *bifrontalis*
(p. 383)

2. Ocular fused with nasal.

16 segments in a midbody annulus; 8 preanal pores *haughi*
(p. 384)

22 segments in a midbody annulus; 0 preanal pores *schaeferi*
(p. 384)

B. Preanal pores 6 or less, or lacking (see also *schaeferi* above). Africa south of the equator.

1. Ocular distinct.

a. A preocular between prefrontal and labials.

221-242 annuli on body only; range South West Africa eastwards to the Kalahari *q. quadrifrons*
(p. 385)

198-221 annuli on body only; range from the Kalahari eastwards to Mozambique *q. capensis*
(p. 387)

b. No preocular (being fused with prefrontal).

Prefrontal and first upper labial distinct.

An ocular, eye distinct; 46-59 annuli on tail; 4 preanal pores. *violacea*
(p. 389)

No ocular, eye hidden; 20 annuli on tail; 6 preanal pores. *phylofiniens*
(p. 390)

Prefrontal and first upper labial fused with nasal; eye hidden; 5-6 preanal pores *mpwapwaensis*
(p. 391)

2. Ocular, preocular, prefrontal frontal and first labial all fused with nasal (second labial also fused except in *langi*, where it covers the eye).
- a. First lower labials separated by postmental.
- Temporals broadly in contact on the median line separating postfrontals from parietals.
- 12 (very rarely 10) dorsal and 12 ventral segments in a midbody annulus; 266-280 annuli on body, 28-29 on tail.
ewerbecki
(p. 392)
- 10 (invariably) dorsal and 10 ventral segments in a midbody annulus; 227-247 annuli on body, 23-28 on tail.
rondoensis
(p. 394)
- Temporals separated by postfrontals and parietals; 12 dorsal and 10 ventral segments in a midbody annulus; 257-260 annuli on body, 24-26 on tail*orientalis*
(p. 396)
- b. First lower labials in contact behind mental.
- Temporals in contact on the median line separating postfrontals from parietals; 12 dorsal and 12 ventral segments in a midbody annulus.
- Temporals barely in contact in a point between postfrontals and parietals; 235 annuli on body, 27 on tail.*bushbyi*
(p. 397)
- Temporals broadly in contact between postfrontals and parietals; 246 annuli on body, 24 on tail.*swynnertoni*
(p. 397)
- Temporals well separated by postfrontals and parietals; 286-290 annuli on body, 30-32 on tail.*langi*
(p. 399)

AMPHISBAENA KRAUSSI Peters

- 1878b. *Amphisbaena Kraussi* Peters, Sitz. Ges. Naturf. Freunde Berlin, p. 192: West Africa.
- 1878c. Peters, p. 781, pl. -, fig. 5.
1881. Strauch, p. 388.
- 1885e. Boulenger, p. 447.
- 1910b. Werner, p. 40.
1919. Schmidt, p. 601.

Description. Rostral moderate, triangular; nasals half as long as prefrontals, forming a suture behind the rostral; frontal very small; a pair of postfrontals; a pair of parietals; a pair of occipitals; no supra-ocular; a preocular separating nasal from ocular, eye distinct; 3 upper

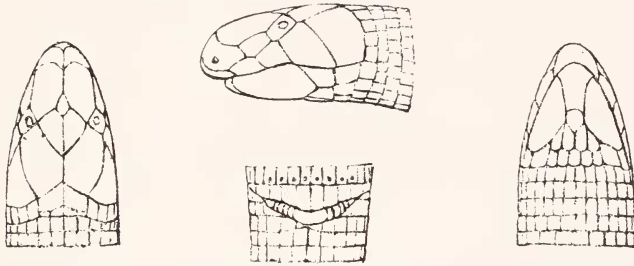


Fig. 8. *Amphisbaena kraussi* (Type after Peters).

labials, third largest; a very large temporal; mental elongate; 2 lower labials, first very large, second small; postmental small; 4 chin shields, all in contact with first lower labials; 6 anals; 8 preanal pores.

Distribution. **West Africa.** (Known only from the description of the types in the Berlin Museum).

AMPHISBAENA LEUCURA Duinéril & Bibron

1839. *Amphisbaena leucura* Duméril & Bibron, *Erpét. Gén.*, **5**, p. 498: Guinea Coast.
 1862. Peters, p. 25.
 1879b. Peters, p. 277, pl. —, fig. 5.
 1881. Strauch, p. 388.
 1885e. Boulenger, p. 447.
 1901c. Tornier, p. 73.
 1910b. Werner, p. 40.
 1917c. Chabanaud, p. 87.
 1919. Schmidt, p. 601.
 1844. *Cynisca leucura* Gray, p. 71.
 1865. Gray, p. 448.
 1872. Gray, p. 36.
 1906i. *Amphisbaena petersii* Boulenger, *Ann. Mus. Civ. Stor. Nat. Genova* (3), **2**, p. 201: Gold Coast and Jebba, Upper Niger, Nigeria.
 1910b. Werner, p. 40.
 1913c. Werner, p. 14.

Description. Rostral moderate, triangular; nasal fused (at least anteriorly) with prefrontal, forming a long suture with its fellow

behind the rostral; no prefrontals; frontal large, between the supraoculars; a pair of postfrontals; a pair of parietals; one or two pairs of occipitals; a supraocular; a preocular separating only lower part of nasal from ocular; eye distinct; a postocular; 3 upper labials, third largest; 3-4 moderate temporals; mental elongate; 2 lower labials, first very large, second small; postmental present (*petersii*), or absent

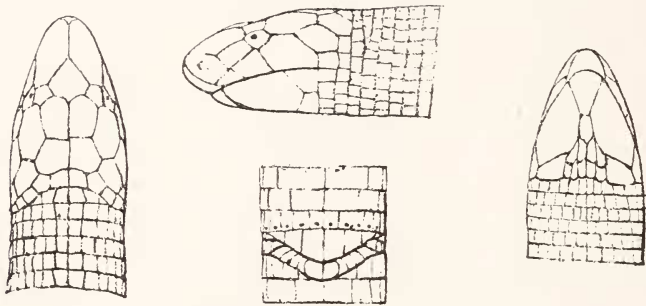


Fig. 9. *Amphisbaena leucura* (after Peters).

(*leucura*); 4 chin shields, all in contact with first lower labials; 206-233 annuli on body, 28-29 on tail; 24-34 (12-20 + 12-14) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 6-10 anals; 8-10 preanal pores.

Dentition. Premaxillary teeth 5; maxillaries 4-4; mandibulars 7-7.

Measurements. Total length 258 (226 + 32) mm.

Distribution. **Nigeria:** Calabar; Jebba; Keana. **Dahomey:** Agou-agou. **Togoland:** Kete Kratje; Klein Popo; Mangu; Sokode. **Gold Coast:** Accra; Keta. **Liberia** (Hamburg Museum, examined).

Remarks. Tornier (1901c, p. 73) points out misprints and errors in Boulenger's (1885e, p. 447) key to this species. When proposing the name *petersii* for the specimen figured by Peters (1879, fig. 5), Boulenger states that *leucura* has no postmental, while *petersii* has. Duméril & Bibron make no mention of this point in their description of *leucura*, presumably the type was later examined by Boulenger. In view of the instability observed in postmentals and chin shields both as regards division and fusion in members of this genus—some of which have been figured for *liberiensis* by Brongersma—I am not prepared to recognise *petersii* as a valid species on the basis of this single character, more particularly as it does not appear to be correlated with geographical distribution.

AMPHISBAENA MÜLLERI Strauch

1878. *Cynisca* sp. Müller, Verh. Naturf. Ges. Basel, **6**, p. 704, pl. ii, fig. c:
Akropong, Goldcoast.
1881. *Amphisbaena Mülleri* Strauch, Mém. Biol. Acad. Sci. St. Pétersbourg,
11, p. 389: Akropong, Goldcoast.
- 1885e. Boulenger, p. 448.
- 1893c. Matschie, p. 210.
- 1910b. Werner, p. 40.
1919. Schmidt, p. 601.

Description. Rostral moderate, triangular; nasal fused with first labial, preocular and prefrontal, forming a long suture with its fellow behind the rostral; no prefrontals; frontal small; a pair of postfrontals;

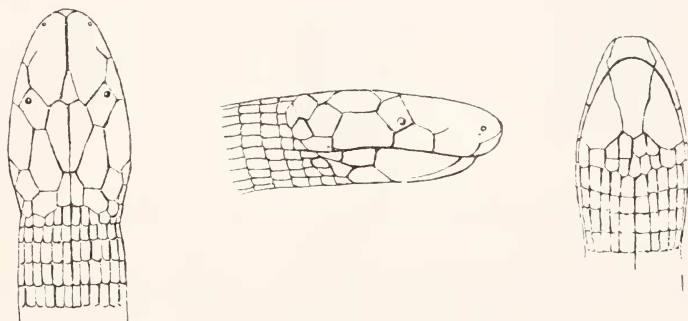


Fig. 10. *Amphisbaena mülleri* (Type after Müller).

a pair of parietals; no occipitals; no supraocular; no preocular; ocular large, eye distinct; 2 (second and third) upper labials, posterior largest; 3 moderate temporals; mental elongate; 2 lower labials, first very large, second small; no postmental; 4 chin shields, all in contact with first lower labials; 229-240 annuli on body, 25-27 on tail; 24-26 (12 + 12-14) segments in a midbody annulus; 6 anals; 12 preanal pores.

Measurements. Total length 195 (175 + 20) mm.

Distribution. **Gold Coast:** Akropong. **Sierra Leone.** (Known only from the cotypes in the Basel and Stuttgart Museums).

AMPHISBAENA LEONINA Müller

- 1885d. *Amphisbaena leonina* Müller, Ver. Naturf. Ges. Basel, **7**, p. 700, pl. ix,
figs. a-e: Tumbo Island, French Guinea.
- 1885e. Boulenger, p. 448.
- 1910b. Werner, p. 41.
- 1939a. Parker, p. 89.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular and prefrontal, forming a long suture with its fellow behind the rostral; no prefrontals; frontal small; a pair of postfrontals; a pair of parietals; no occipitals; no supraocular; no preocular; ocular large, eye distinct; 1 (third) upper labial; 2 temporals, upper very large, forming an extensive suture with a postfrontal and parietal; mental elongate; 2 lower labials, first very large, second small;

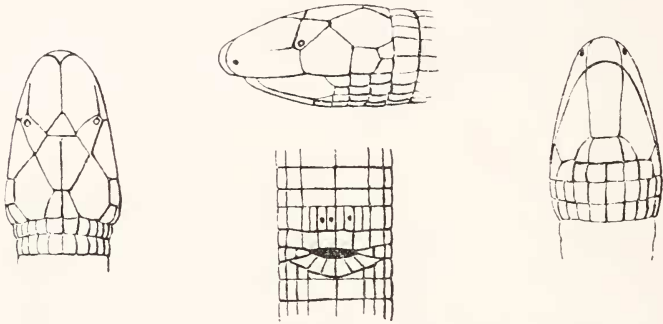


Fig. 11. *Amphisbaena leonina* (Type after Müller).

a postmental, flanked on either side by a chin shield which is in contact with a first lower labial; 227-240 annuli on body, 20-21 on tail; 24 (14 + 10) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 6 anals; 3-7 preanal pores.

Measurements. Total length 170 (155 + 15) mm.

Distribution. **Portuguese Guinea:** Rio Pongo. **French Guinea:** Kassa and Tumbo in the Los Islands. (Known only from the type in Basel Museum, a second specimen in the Royal Brussels Museum, and a third in Hamburg Museum, which latter I have examined).

Remarks. Closely related to *Placogaster degrysi* sp. n., of Lagos, Sierra Leone, for points of difference see page 000 Parker (1939a) comments on the conspicuousness of the middorsal furrow which he says is as noticeable as those on the flanks.

AMPHISBAENA OLIGOPHOLIS Boulenger

- 1906i. *Amphisbaena oligopholis* Boulenger, Ann. Mus. Civ. Stor. Nat. Genova (3), 2, p. 201, fig. 1: Cassine River district, Portuguese Guinea.
 1910b. Werner, p. 40.
 1919. Schmidt, p. 601.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular and prefrontal, forming a long suture with its fellow behind the rostral; no prefrontals; frontal small; a pair of very elongated postfrontals; no parietals (obviously fused with postfrontals); no occipitals; no supraocular; no preocular; ocular moderate, eye hidden; 1 (third) upper labial; 1 large temporal with which are fused the scales normally below it; mental elongate; 2 lower

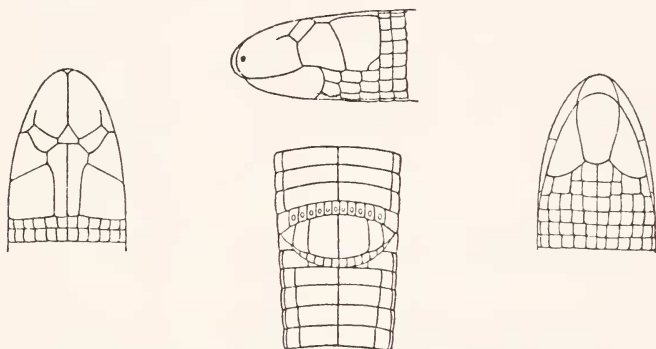


Fig. 12. *Amphisbaena oligopholis* (Type after Boulenger).

labials, first very large, second small; no postmental; 4 chin shields, all in contact with first lower labials; 219–248 annuli on body, 12–28 on tail; 18 (10 + 8) segments in a midbody annulus, the 2 median ventral segments 3 times as broad as long; 4–6 anals; 9–11 preanal pores.

Measurements. Total length 165 (147 + 18) mm.

Distribution. **Portuguese Guinea:** Cassine River district. (Known only from the eight cotypes in the Genoa and British Museums).

AMPHISBAENA LIBERIENSIS (Boulenger)

1878. *Ophioproctes Liberiensis* Boulenger, Bull. Soc. zool. France, **3**, p. 301, figs. 1–3: Liberia.
1881. *Amphisbaena liberiensis* Strauch, pp. 369, 390.
- 1885e. Boulenger, p. 449.
1890. Büttikofer, pp. 443, 478.
1906. Johnston, pp. 816, 833.
- 1910b. Werner, p. 40.
1919. Schmidt, p. 599.
- 1930a. Barbour & Loveridge, p. 784.
1935. Brongersma, p. 259, figs. 1–6.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal;

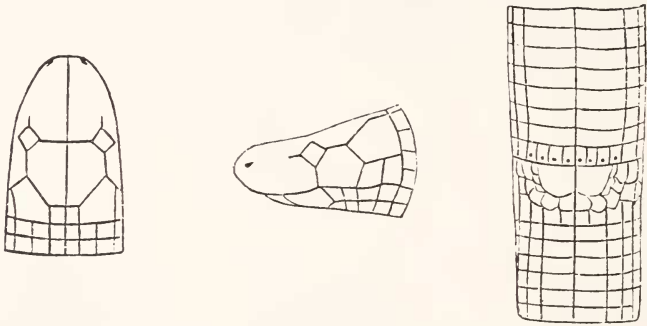


Fig. 13. *Amphisbaena liberiensis* (Type after Boulenger).

a pair of postfrontals; no parietals (obviously fused with postfrontals); a pair of occipitals; no supraocular; no preocular; ocular moderate, eye hidden; 1 (third) upper labial, sometimes giving off a smaller one

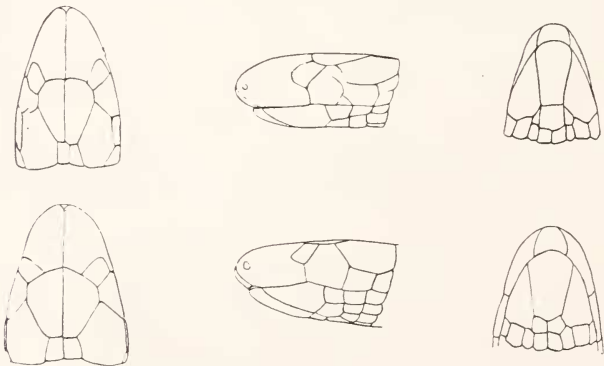


Fig. 14. *Amphisbaena liberiensis* (Variants after Brongersma).

by division; 3 large temporals, subject to subdivision; mental elongate; 2 lower labials, first very large, second small; postmental, flanked on either side by a chin shield, or alternatively 2-4 chin shields only and no postmental; 219-236 annuli on body, 24-27 on tail; 22-24 seg-

ments in a midbody annulus, the 2 median ventral segments from two and a half to three times as broad as long; 2 anals; 8 preanal pores.

Measurements. Total length 153 (135 + 18) mm.

Habitat. One was taken in a hollow tree by Büttikofer.

Distribution. **Liberia:** Robertsport; Soforeh Place, fifty miles up the St. Paul's River. (Known only from the type in the Brussels Museum and three examples in Leiden Museum).

AMPHISBAENA BIFRONTALIS Boulenger

1906i. *Amphisbaena bifrontalis* Boulenger, Ann. Mus. Civ. Stor. Nat. Genova (3), 2, p. 202, fig. 2: Fernand Vaz, French Congo.

1910b. Werner, p. 41.

1919. Schmidt, p. 599.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, prefrontal and frontal, forming a long

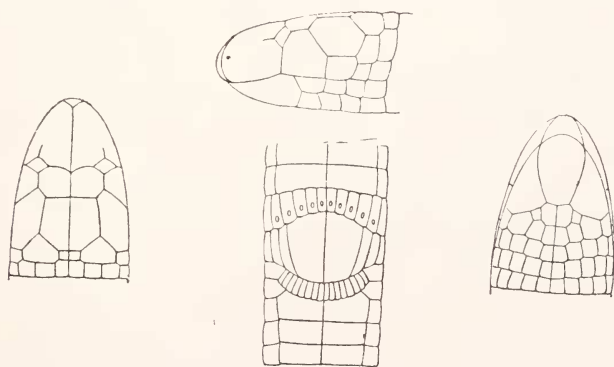


Fig. 15. *Amphisbaena bifrontalis* (Type after Boulenger).

suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals, as broad as long; a pair of parietals; a pair of occipitals; no supraocular; no preocular; ocular moderate, eye hidden; 1 (third) upper labial; 3 large temporals; mental elongate; 2 lower labials, first very large, second small; no postmental; 4 chin shields, all in contact with first lower labials; 237 annuli on body, 13 (? mutilated) on tail; 16 (8 + 8) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 6 anals; 10 preanal pores.

Measurements. Total length 140 (130 + 10) mm.

Distribution. **French Congo:** Fernand Vaz. (Known only from the type in the Genoa Museum).

AMPHISBAENA HAUGHI Mocquard

1904. *Amphisbaena Haughi* Mocquard, Bull. Mus. Paris, **10**, p. 301: Southwest of Lambarene, French Congo.

1910b. Werner, p. 41.

1919. Schmidt, p. 599.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals; a pair of parietals; no supraocular; no preocular; no ocular, eye hidden; 1 (third) upper labial; 2 large temporals (lower called a labial by Mocquard); mental elongate; 2 lower labials, first very large, second small; 235 annuli on body, 29 on tail; 16 (8 + 8) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 2 anals; 8 preanal pores.

Measurements. Total length 140 (124 + 16) mm.

Distribution. **French Congo:** about fifty kilometres southwest of Lambarene. (Known only from the type in the Paris Museum).

AMPHISBAENA SCHAEFERI (Sternfeld)

1912a. *Chirindia schaeferi* Sternfeld, Sitz. Ges. Naturf. Freunde Berlin, p. 250, fig. 2: Japoma, Cameroon.

1919. Schmidt, p. 599.

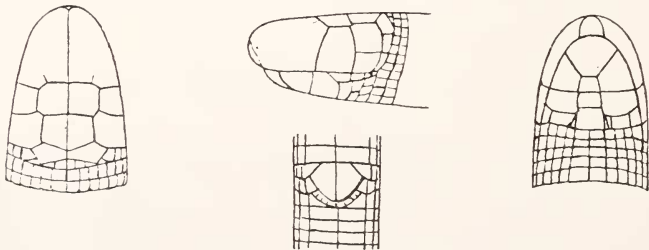


Fig. 16. *Amphisbaena schaeferi* (Type after Sternfeld).

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no

frontal; a pair of postfrontals; a pair of parietals; a pair of occipitals; no supraocular; no preocular; no ocular, eye hidden; 1 (third) upper labial; 2 large temporals; mental elongate ? (Sternfeld states that the type is damaged and that the drawing may be erroneous); 250 annuli on body, 27 on tail; 22 (12 + 10) segments in a midbody annulus, the 2 median segments about two times as broad as long; 2 anals; 0 preanal pores.

Measurements. Total length 219 (186 + 23) mm.

Distribution. **Cameroon:** Japoma. (Known only from the type in the Berlin Museum).

AMPHISBAENA QUADRIFRONS QUADRIFRONS Peters

- 1862a. *Amphisbaena quadrifrons* Peters, Ber. Akad. Wiss. Berlin, p. 25: Neu Barmen, Hereroland, South West Africa.
 1869b. Peters, p. 661.
 1879b. Peters, p. 277, pl. -, fig. 4.
 1881. Strauch, p. 412.
 1885e. Boulenger, p. 447.
 1898. Sclater, p. 104.
 1910a. Hewitt, pp. 60, 69.
 1910a. Werner, p. 327.
 1910b. Werner, p. 41.
 1911. Lampe, p. 167.
 1911b. Sternfeld, p. 403.
 1911d. Sternfeld, p. 25.
 1913. Hewitt and Power, p. 155.
 1914a. Nieden, p. 450.
 1915c. Werner, p. 339.
 1930. FitzSimons (part), pp. 33, 34.
 1935b. FitzSimons (part), p. 353.
 1936c. Parker (part), p. 140.
 1938. FitzSimons (part), p. 194.
 1872. *Cynisca quadrifrons* Gray, p. 36.
 1931. ? *Amphisbaena ambuellensis* Monard, Bull. Soc. Neuchatel Sci. Nat., 55, p. 93, figs. 1-4: Chimporo and Kakindo (Caquindo), Angola.
 1937b. ? Monard, p. 65, fig. 3, no. 1.

Description. Rostral moderate, triangular; nasal forming a suture with its fellow behind the rostral; a pair of prefrontals, separated from the first and second labials; no frontal; a pair of postfrontals; a pair of small parietals, rarely subdivided; a pair of small occipitals, rarely subdivided; no supraocular, but a preocular which extends above ocular and is in contact with a prefrontal and postfrontal above, a

nasal before, and a first and second labial below; ocular moderate, eye distinct; 3 upper labials, third largest; 3-6 large temporals, upper in contact with a postfrontal, parietal and occipital, and anteriorly with ocular and third labial; mental moderate, subquadrangular; 3 lower

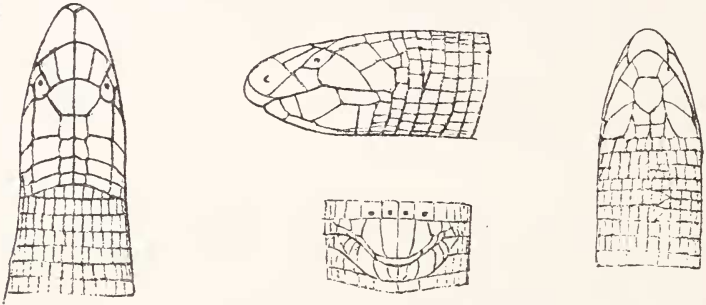


Fig. 17. *Amphisbaena quadrifrons quadrifrons* (Type after Peters).

labials, first small, second very large; postmental elongate; 2 chin shields separated by a large sublabial from the lower labials, or 4 chin shields, outer in contact with second lower labial; 221-242 annuli on body, 41-50 on tail; 33-38 (17-22 + 16-22) segments in a midbody

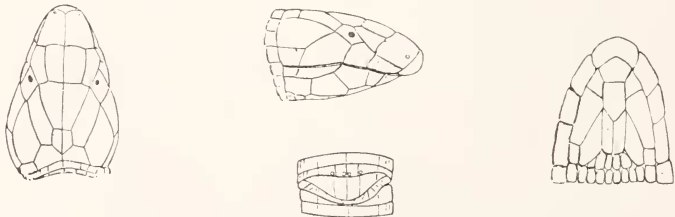


Fig. 18. *Amphisbaena ambuellensis* (Type after Monard). Here considered a synonym of *A. q. quadrifrons* Peters.

annulus, the 2 median ventral segments about two times as broad as long; 4-6 anals; 4 preanal pores.

Dentition. "Premaxillary teeth 2; maxillaries 3-3; mandibulars 5-5," is given by Monard for *ambuellensis* but is almost certainly based on a defective series, cf. allied species.

Measurements. Total length 208 (176 + 32) mm.¹

¹ Exceeded by Werner's (1910a, p. 327) extraordinary measurement of 396 mm. for a specimen from Vlei Topan, British Bechuanaland!

Habitat. Usually found beneath stones and logs on the sand veld. On being exposed they immediately burrow out of sight.

Distribution. **Bechuanaland Protectorate:** Chukudu; Gemsbok; Gomodimo; Kaotwe Pan; near Khakhea; Mabeleapudi; near Machumi Pan; Mochudi; Molepolole; Mothatlogo; Severelela; Shaleshonto; Sunnyside; Topan Vlei. **South West Africa:** Damaraland; Grootfontein; Hereroland: Neu Barmen; Hoffnung; Liebig's Ranch; Namutoni; Okahandja; near Okaukuejo; Otjituezu Farm near Neudamm; Outgo; Tsaobis; Windhuk. **Angola:** Chimporo; Kakindo.

Remarks. It is with some misgivings that I tentatively synonymize the three cotypes of *ambuellensis* with *quadrifrons*, for if the post-frontal-occipital arrangement as figured by Monard (see text-fig. 18 in this paper) should prove constant in Angola, then the recognition of an Angolan race would be justified. The condition, however, is approached by such specimens as M. C. Z. 42,867 from Lukafu, Belgian Congo, a locality where normal arrangement of these shields predominates among *A. q. capensis* which is so abundant there. As the species is particularly liable to unilateral subdivision of these head shields, I doubt the probability of Angolan examples being more stable. Nor, so far as my experience goes, is it usual to find racial differentiation as between the fauna of southern Angola and that of South West Africa. The alleged difference cited by Monard in his later paper (1937b, p. 66) is really one of interpretation, the scale he designates as a fourth upper labial is here called a lower temporal.

Comments on the reasons for recognising the race *capensis* will be found below.

AMPHISBAENA QUADRIFRONS CAPENSIS Thominot

1887b. *Amphisbaena quadrifrons* Boettger (not of Peters), p. 144.

1893a. Boettger, p. 77.

1894e. Boulenger, p. 724.

1910b. Boulenger, p. 472.

1910. Peracca, p. 1.

1912. Peracca, p. 2.

1920b. Angel, p. 614.

1930. FitzSimons (part), pp. 33, 34.

1933m. Witte, p. 72.

1934a. Cott (part), p. 160.

1934. Pitman, p. 304.

1935a. FitzSimons, p. 535.

- 1935b. FitzSimons (part), p. 353.
 1936c. Parker (part), p. 140.
 1938. FitzSimons (part), p. 140.
 1887. *Amphisbaena capensis* Thomillot, Bull. Soc. Philom. Paris (7), **11**, p. 188; Lake Ngami, Bechuanaland Protectorate.
 1910b. Werner, p. 41.
 1930c. *Amphisbaena violacea* Witte (not of Peters), p. 85.
 1931b. ¹*Monopeltis quadrifrons* Witte, p. 41 (misprint for *Amphisbaena*).

Description. Essentially similar to the typical form except that there are 198–221 annuli on body, 38–50 on tail; 29–38 (15–20 + 12–18) segments in a midbody annulus.

Measurements. Total length (Lukafu, Congo) 259 (221 + 38) mm.

Distribution. **Mozambique:** Charre. **Southern Rhodesia:** Chirinda Forest; Mtoko. **Northern Rhodesia:** Lake Bangweulu; Lealui; Sesheke in Barotseland. **Bechuanaland Protectorate:** Kabulabula; Lake Ngami; Noi Xas near Ghanzi. **Transvaal:** Pietersburg. **Cape Province:** Daniels Kuil; Kuruman; Warrandale. **Belgian Congo:** Flandria in Equateur Province; Kakyelo; Luapula River near Sekantui; Lukafu.

The respective ranges of the two forms would appear to be as follows: *A. q. quadrifrons* South West Africa east to the vicinity of Lake Ngami and Kuruman where it meets with *A. q. capensis* which ranges eastward to Mozambique and northeast to the Luapula River in southeast Belgian Congo.

Remarks. FitzSimons, Cott and Parker have all drawn attention to the wide range in number of body annuli presented by *quadrifrons*. On making a list of the limits of variation for every species in the genus, I found that none exceeded 28 with the exception of *quadrifrons* which showed 45. It seemed probable therefore that a southwestern and eastern, or northeastern, form might be recognised, the latter with 198–221 annuli, the other with 221–242.

Most unfortunately a name (*capensis*) is available for the eastern form for the type came from the extreme western limits of its range, *i.e.* Lake Ngami, an area where one may expect to encounter intermediates. The type of *capensis* was said to have "about 210" annuli on body, each annulus being composed of 28 (16 + 14) segments. As the sum of 16 and 14 is 30, it is difficult to know which figure is incorrect.

¹ Though this record from Flandria, Equateur Province, is far north of the range, Dr. de Witte, having reexamined the specimen, assures me that both locality and its identification with *quadrifrons* may be relied upon.

Angel (1920b, p. 614) records that one of his three specimens differs from the other two, which agree precisely with Peter's figure, in that the two large temporals, instead of being separated by the nuchals, meet to form a long suture on the median line.

AMPHISBAENA VIOLACEA Peters

1854. *Amphisbaena violacca* Peters, Ber. Akad. Wiss. Berlin, p. 620: Inhambane and Lourenco Marques, Mozambique.
 1855. Peters, p. 49.
 1862. Peters, p. 26.
 1881. Strauch, p. 411.
 1882. Peters, p. 85, pl. xiii, figs. 2-2h.
 1885e. Boulenger, p. 446.
 1896a. Bocage, p. 99.
 1898. Sclater, p. 104.
 1908b. Boulenger, p. 225.
 1910b. Boulenger, p. 472.
 1910a. Hewitt, pp. 60, 70.
 1910b. Werner, p. 41.
 1930. FitzSimons, p. 34.
 1872. *Cynisca ? violacea* Gray, p. 36.
 1930. *Amphisbaena vandami* FitzSimons, Ann. Transvaal Mus., 14, p. 32, figs. 11-14: Louw's Creek, Barberton district, Transvaal.

Description. Rostral moderate, triangular; nasal forming a suture with its fellow behind the rostral; a pair of prefrontals, in contact with

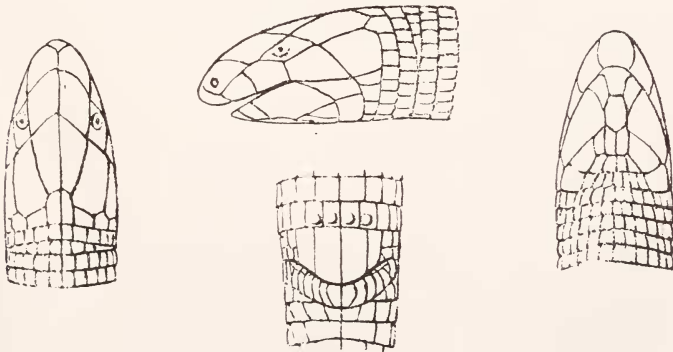


Fig. 19. *Amphisbaena violacea* (Type after Peters).

first and second labials; no frontal; a pair of postfrontals; a pair of small parietals; a pair of small occipitals; no supraocular; no preocular;

an ocular, eye distinct; 3 upper labials, third largest; 2-6 large temporals (subject to division), upper in contact with a postfrontal, parietal, occipital, and anteriorly with the ocular and third labial; mental moderate, subquadrangular; 3 lower labials, first small, second very large; postmental elongate, heptagonal; 2 chin shields, separated by a large sublabial from the lower labials, or anteriorly in contact with second lower labial; 181-202 annuli on body, 46-59 on tail; 28-38 (16-20 + 14-18) segments in a midbody annulus, the 2 median ventral segments slightly broader than long; 4-6 anals; 4 preanal pores.

Dentition. Premaxillary teeth 7, maxillaries 4-4; mandibulars 7-7.

Measurements. Total length 198 (153 + 45) mm.

Distribution. **Mozambique:** Inhambane; Lourenco Marques. **Transvaal:** Barberton district: Louw's Creek. **Zululand:** Kosi Bay. (Type of *violacea* in the Berlin Museum, *vandami* (T. M. 4279) in the Transvaal Museum).

Remarks. Boulenger's (1910b, p. 472) inclusion of Bechuanaland in the range of this coastal species, was based on his incorrect synonymizing of *capensis* from Lake Ngami with *violacea* instead of with *quadrifrons*. Witte's (1930c, p. 85) record of *violacea* from Lake Bangweulu, Northern Rhodesia, is assumed to be a misidentification for *quadrifrons*.

AMPHISBAENA PHYLOFINIENS Tornier

- 1899a. *Amphisbaena phylofiniens* Tornier, Zool. Anz., **22**, p. 260: Ujiji, Tanganyika Territory.
 1900b. Tornier, p. 591.
 1910b. Werner, p. 40.
 1913c. Nieden, p. 75.
 1923d. Loveridge, p. 851.
 1924b. Loveridge, p. 11.
 1937f. Loveridge, p. 495.

Description. Rostral moderate, triangular; nasal forming a suture with its fellow behind the rostral; a pair of prefrontals, in contact with first and second labials; no frontal; a pair of postfrontals; a pair of large parietals in contact on the median line; a pair of small occipitals (in the first annulus); no supraocular; no preocular; no ocular, eye hidden; 3 upper labials, third largest; 3 temporals, the anterior very large, its upper edge in contact only with a parietal; mental moderate, rounded posteriorly; 3 lower labials, third largest; postmental elongate,

shield-shaped; 2-4 chin shields, the outer in contact with the second and third lower labials; 244-260 annuli on body, 6-20 on tail; 30-32 (14-16 + 16-17) segments in a midbody annulus, the 2 median ventral segments slightly broader than long; 10-12 anals; 6 preanal pores.

Measurements. Total length 203 (185 + 18) mm.

Habitat. Occurs in sandy soil in the low-lying rice fields of Ruanda, a few miles east of Ujiji.

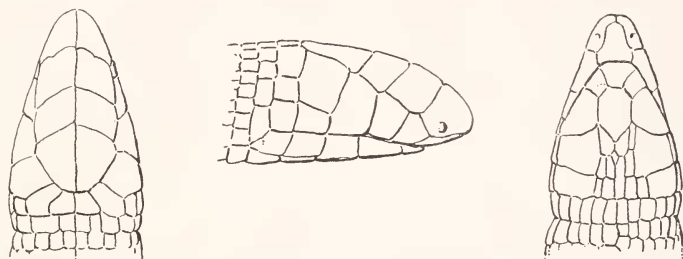


Fig. 20. *Amphisbaena phylofiniens* (Topotype ♀ M.C.Z. 47901).

Distribution. **Tanganyika Territory:** Ujiji and vicinity.

Remarks. Known only from the two cotypes in the Berlin Museum, and four examples in the Museum of Comparative Zoölogy. I was informed by the District Officer, Mr. J. R. Johnston, that he had seen a specimen of this rare amphisbaenid in sandy country near Lake Tanganyika at least twenty miles south of Ujiji.

AMPHISBAENA MPWAPWAENSIS Loveridge

1932a. *Amphisbaena mpwapwaensis* Loveridge, Bull. Mus. Comp. Zoöl., **72**, p. 378: Mpwapwa, Ugogo, Tanganyika Territory.

1933h. Loveridge, p. 304, pl. iii, fig. 1.

1937f. Loveridge, p. 495.

Description. Rostral moderate, triangular; nasal fused with first labial, preocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals; a pair of parietals; a pair of occipitals; no supraocular; no preocular; an ocular separating postfrontal from anterior labial, eye hidden; 2 (second and third) upper labials, posterior largest; 2-3 moderate temporals, upper in contact with postfrontal, parietal, posterior labial and other temporals; mental elongate, subtriangular;

3 (or 2) lower labials, first very large, second small; postmental small; 4 (not 3) chin shields; 269-273 annuli on body, 26 on tail; 30 (14 + 16) segments in a midbody annulus; 6 anals; 5-6 preanal pores.

Measurements. Total length of ♂, 194 (175 + 19) mm., of ♀, 162 (147 + 15) mm.

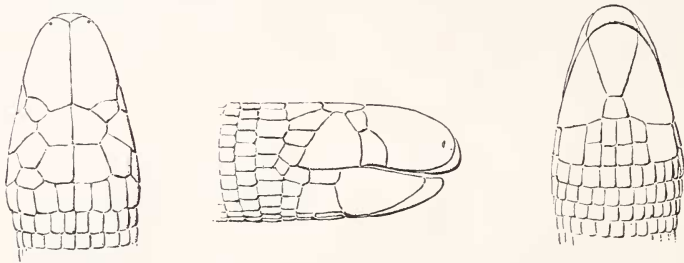


Fig. 21. *Amphisbaena mpwapwaensis* (Type ♂ M.C.Z. 30767).

Habitat. Taken by digging in dry earth beneath a fallen tree lying beside the stream which meanders past the front of the Veterinary Headquarters office, built in 1929.

Distribution. **Tanganyika Territory:** Central Province: Mpwapwa. (Known only from the types (M.C.Z. 30767-8) in the Museum of Comparative Zoölogy, Cambridge, Massachusetts).

AMPHISBAENA EWERBECKI (Werner)

1910b (1909). *Chirindia ewerbecki* Werner, Mitt. Zool. Nat. Mus. Hamburg, 27, p. 37: Mbanja (Banja), ten miles north of Lindi, Tanganyika Territory.

1923d. Loveridge, p. 651.

1924b. Loveridge, p. 11.

1937f. Loveridge, p. 493.

Native name. *Mbitu* (Kimakonde, but applied to *Leptotyphlops* also).

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals¹ (followed by a pair of temporals broadly in contact on the median line and followed by) a pair of parietals; 1-2 pairs of poorly defined occipitals (in first annulus); no supraocular; no preocular; no ocular, eye usually distinguishable under posterior

¹ Left prefrontal fused with left temporal in one ♀ topotype.

edge of fused nasal¹; 1 (third) upper labial in contact with postfrontal; 2-3 temporals, upper in contact with postfrontal, parietal, labial and anterior lower temporal; mental elongate, subtriangular; 3 lower labials, first very large, second very small; postmental small; 2 + 3, 3 + 3 and 2 + 4 chin shields; 264-280² annuli on body; 25-28 on tail; 22-24 (10-12 + 12) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 6 anals, the outer ones frequently subject to division; 6 preanal pores in male, 0 in female.

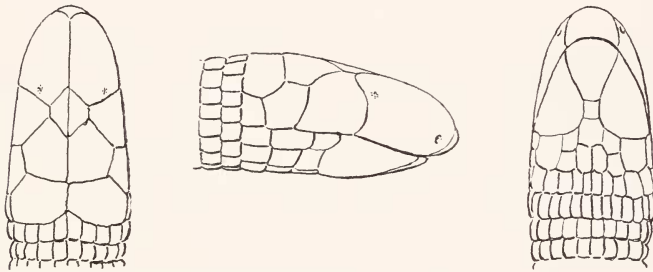


Fig. 22. *Amphisbaena ewerbecki* (Topotype ♀ M.C.Z. 47907).

Dentition. Premaxillary teeth 7; maxillaries 4-4; mandibulars 7-7.

Measurements. Largest ♂ (M. C. Z. 47922) measures 150 (133 + 17) mm., largest ♀ (M. C. Z. 47934) measures 154 (137 + 17) mm.

Breeding. A ♀, taken on April 27, 1939, held a single enormously elongate egg, measuring 31 x 2 mm.

Habitat. Fifty of the Mbanja topotypes in the collection of the Museum of Comparative Zoölogy, were dug from the red laterite soil on the Mitonga aerodrome, altitude about 90 feet. Twenty more were found in the sandy soil of the adjacent native mahoga gardens, some being secured by digging deeply beneath logs. The solitary specimen obtained at Lindi, was lying on the surface beneath palm leaves in a sandy side street in the northern part of the town. Our success in finding these amphisbaenids within two feet of the surface was almost certainly due to the heavy rains at that time (April 26 to May 5).

Distribution. **Tanganyika Territory:** Southern Province: Lindi, and Mbanja, the latter being about fifty miles in a straight line from the type locality of *A. rondoensis*, its nearest relative.

¹ "Under labial" according to Werner, is incorrect.

² "about 290" according to Werner, I have examined the type, however, which is in too poor a state of preservation for one to make an accurate count.

Remarks. Scale-counts have been made on the type, forty-four topotypes, and a Lindi specimen. All had 12 ventral segments in a midbody annulus, thirty-seven had 12 dorsal segments while only seven had 10 or 11 segments, two others were uncountable. None had lost their tails, but four had 10 annuli only, leading to the assumption that they were regenerated. Presuming that all poreless individuals are females, we find only twelve males to thirty-four females: in this connection see the percentage of males in the next species — *rondoensis*.

AMPHISBAENA RONDOENSIS spec. nov.

Type. Museum of Comparative Zoölogy, No. 47,951. An adult ♂ from Nchingidi, 2,700 feet, Rondo Plateau, Southern Province, Tanganyika Territory. Collected by Arthur Loveridge, May 9–19, 1939.

Paratypes. Museum of Comparative Zoölogy, Nos. 47,952–47,999, being forty seven specimens with the same data as the type.

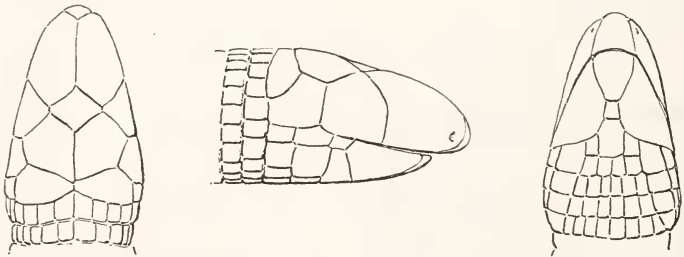


Fig. 23. *Amphisbaena rondoensis* (Type ♂ M.C.Z. 47951).

Diagnosis. Nearly related to *A. everbecki* (Werner) from which it differs in invariably possessing 10 dorsal and 10 ventral segments in a midbody annulus, 227–247 annuli on body and 24–28 on tail.

Native name. *Liviluvilu* (Kimera).

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals (followed by a pair of temporals broadly in contact on the median line and followed by) a pair of parietals; 1–2 pairs of poorly defined occipitals (in first annulus); no supraocular; no preocular; no ocular, eye usually distinguishable under posterior edge of fused nasal; 1 (third) upper labial narrowly in contact with

postfrontal; 2 (17 ex.) or 3 (30 ex.) temporals, upper broadly in contact with its fellow on the median line, lower (sometimes divided to give off a small posterior one) immediately posterior to the single surviving labial (it might well be mistaken for a labial), in one specimen (M. C. Z. 47991) what would have been a third temporal has fused with the parietal above it; mental elongate, subtriangular; 3 lower labials, first very large, second very small; postmental small; 2 + 4 chin shields; 227-247 annuli on body; 23-28 on tail; 20 (10 + 10) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 6 anals, the outer ones frequently subject to division; 6 preanal pores in male, 0 in female.

Dentition. Premaxillary teeth 7; maxillaries 4-4; mandibulars 6-6.¹

Coloration. In life, vivid flesh pink. In alcohol, pallid pink.

Measurements. Largest ♂ (Type. M. C. Z. 47,951) measures 140 (122 + 18) mm., largest ♀ (Paratype. M. C. Z. 47,952) measures 146.5 (129 + 17.5) mm. Males average smaller than females.

Habitat. The entire series were obtained by my own collector digging in the sandy and laterite soil beneath rotting logs or matted vegetation at the edge of the primary forest within a square mile of my camp in the clearing known as Nchingidi.

Distribution. **Tanganyika Territory:** Southern Province: Rondo Plateau: Nchingidi, about fifty miles southwest of Lindi. (Known only from the 49 specimens listed above).

Remarks. Scale-counts have been made on all forty-nine specimens except that a score only were utilised in the counting of midbody annuli, which were not found to vary. Five had lost their tails, several having been cut by the hoe of my native collector; eight others had from 10 to 14 annuli only, leading me to assume that the tails were truncated and regenerated at the tip. Presuming that all poreless individuals are females, we find that this sex predominates surprisingly, there being only twelve males to thirty-six females.

I attribute my good fortune in securing such a series to the fact that the "big rains" were on, at which time it is possible for these delicate little creatures to approach the topsoil. Also to the persistence with which my collector searched for them for about three hours daily. None was brought in by local natives.

¹I take this opportunity of expressing my indebtedness to Dr. R. Zangerl (University of Detroit) for clearing skulls of this and the preceding species, and to Dr. J. H. Waterman (Harvard University) for the illuminating technique which made counts of these diminutive teeth possible.

AMPHISBAENA ORIENTALIS (Sternfeld)

- 1911a. *Amphisbaenula orientalis* Sternfeld, Sitz. Ges. Naturf. Freunde Berlin, p. 246: Mikindani, s. e. Tanganyika Territory.
 1913c. Nieden, p. 75.
 1923d. Loveridge, p. 851.
 1924d. Loveridge, p. 11.
 1937f. Loveridge, p. 493.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals; a pair of parietals; 2 pairs of occipitals;

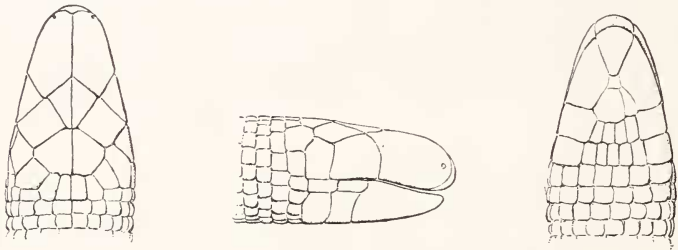


Fig. 24. *Amphisbaena orientalis* (Cotype ♀ M.C.Z. 21904).

no supraoculars; no preocular; no ocular, eye distinguishable under posterior edge of fused nasal; 1 (third) upper labial in contact with postfrontal (or separated by the upper anterior temporal in a topotype); 3 temporals, upper in contact with postfrontal, parietal, labial and other temporals (rarely also the nasal in a topotype); mental elongate, subtriangular; 3 lower labials, first very large, second very small; 2 + 3 or 2 + 4 chin shields; 257-260 annuli on body; 24-26 on tail; 22 (12 + 10) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 6 anals; 5-6 preanal pores present in males, absent in females.

Measurements. Total length 165 (142 + 23) mm.

Habitat. Occurs in red soil on the factory site to the north of the township.

Distribution. **Tanganyika Territory:** Mikindani. (Known only from the cotypes in the Berlin Museum and Museum of Comparative Zoölogy, and a topotype in the latter collection).

AMPHISBAENA BUSHBYI (Cott)

1934a. *Chirindia bushbyi* Cott, Proc. Zool. Soc. London, p. 158, fig. 2: Amatongas, Mozambique.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals; a pair of parietals; 2 pairs of occipitals; no

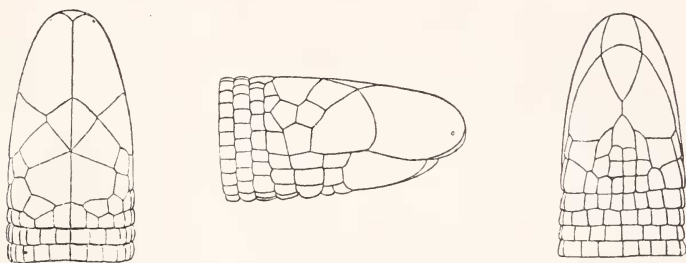


Fig. 25. *Amphisbaena bushbyi* (Type after Cott).

supraocular; no preocular; no ocular, eye hidden; 4 temporals, upper largest, meeting its fellow in a point between the postfrontals and parietals (this scale is called postfrontal by Cott); mental elongate, subtriangular; 3 lower labials, first very large, second very small; postmental small, separated from mental by anterior lower labials which form a suture; 4 chin shields, outer extending forward to contact with anterior lower labial and partly flank the postmental; 235 annuli on body, 27 on tail; 24 (12 + 12) segments in a midbody annulus, the 2 median ventral segments more than two times as broad as long; 6 anals; 0 preanal pores.

Measurements. Total length 95 (85 + 10) mm.

Distribution. **Mozambique:** Amatongas. (Known only from the type in the British Museum).

AMPHISBAENA SWYNNERTONI (Boulenger)

1907g. *Chirindia Swynnertoni* Boulenger, Ann. Mag. Nat. Hist. (7), 20, p. 48, fig.: Chirinda Forest, Mashonaland, Southern Rhodesia.

1910b. Boulenger, p. 472.

1934. Pitman, p. 304.

1939b. FitzSimons, p. 32.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals, followed by a pair of temporals, then a pair of parietals; 2 pairs of occipitals; no supraocular; no preocular; no ocular, eye hidden; 1 (third) upper labial, in contact with postfrontal; 5 temporals, upper largest, forming a long suture with its fellow on the median line between the postfrontals and parietals; mental elongate,

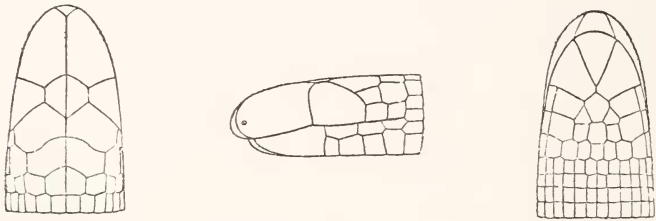


Fig. 26. *Amphisbaena swynnertoni* (Type after Boulenger).

subtriangular; 3 lower labials, first very large, second very small; postmental small, separated from mental by junction of anterior lower labials; 2-4 chin shields, the anterior pair separated by the postmental and in contact with the second lower labial; 246 annuli on body, 24 on tail; 24 (12 + 12) segments in a midbody annulus, the 2 median ventral segments about two times as broad as long; 2 anals, the others being broken up and the condition possibly abnormal; 0 preanal pores.

Measurements. Total length 135 (121 + 14) mm.

Distribution. **Southern Rhodesia:** southeast Mashonaland: Chirinda. (Known only from the type in the British Museum).

Enemies. The type was recovered from the stomach of a kingfisher (*Halcyon albiventris orientalis*) as mentioned by Swynnerton (1908, Ibis (9), 2, p. 402.)

Habitat. Further particulars have been furnished by the late Mr. Swynnerton in a letter dated 18. viii. 1937. He writes: "The bird was shot in the outskirts of the Chirinda forest, which is on red loam derived from dolerite. About 300 yards from where the bird was shot one comes out on to sandstone-shale and grey sandish soil, but it is also a fact that during my many years residence there I found several amphisbaenians in the red loamy soil."

Mr. V. FitzSimmons recently visited the type locality in December and made prolonged, though unsuccessful, search for this interesting species.

AMPHISBAENA LANGI (FitzSimmons)

1939a. *Chirindia langi* FitzSimmons, Ann. Transvaal Mus., 20, p. 8, figs. 5-8:
Punda Maria, near Pafuri River in northeastern Transvaal.

Description. Rostral moderate, triangular; nasal fused with first labial, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal; a pair of postfrontals followed by a pair of parietals; 2 pairs of occipitals (only the posterior pair in first annulus); no supraoculars; no preoculars; no ocular, eye distinguishable beneath second labial¹; 2 labials (second and third) in contact with postfrontal; 2 temporals, anterior in contact with postfrontal, parietal, (third) labial, posterior temporal and below by an enlarged scale; mental elongate, subtriangular or pyriform; 3 lower labials, first very large, second very small; postmental small, triangular, its apex directed anteriorly; 4 + 4 chin shields; 286-290 annuli on body; 30-32 on tail; 28 (14 + 14) segments in a midbody annulus, the 2 median ventral segments one and a half times as broad as long; 6 anals; 0 preanal pores.

Measurements. Type (T.M. 19,197) measures 128 (112.5 + 15.5) mm.

Distribution. **Transvaal:** Punda Maria. (Known only from the type and paratype, possibly both females, in the Transvaal Museum).

Remarks. The nomenclature of the scales used above differs from that employed in the original description for reasons stated on page 355. The triangular frontals of its describer are here called postfrontals, postfrontals become parietals, parietals and post parietals are occipitals. The fourth lower labial of the author is rejected as a labial being posterior to the buccal opening.

Genus PLACOGASTER

1906i. *Placogaster* Boulenger, Ann. Mus. Civ. Stor. Nat. Genova (3), 2, p. 203 (type *feae*).

Ventral segments about six times as broad as long. Otherwise characters as in *Amphisbaena*, with which it may have to be united in the event of intermediate forms being discovered.

Range. Sierra Leone to Portuguese Guinea.

¹ The first labial being lost through fusion with the nasal.

Synopsis of the Species

- A frontal; an ocular; a pair of parietals; 4 chin shields; no preanal pores¹. . . .
degrysi
 (p. 400)
- No frontal; no ocular; no parietals; no chin shields; 6 preanal pores¹. . . .*feae*
 (p. 401)

PLACOGASTER DEGRYSI spec. nov.

Type. Hamburg Museum. No. R. K. 1070, E. K. 13179, from Lagos, Sierra Leone, collected by Dr. H. Ulex in 1888.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular and prefrontal, forming a long suture with its fellow behind the rostral; no prefrontals; frontal small; a pair of postfrontals; a pair of parietals; no occipitals; no supraocular; no preocular; ocular large, eye distinct; 1 (third) upper labial; 2 temporals, upper very large, forming an extensive suture with a postfrontal and parietal; mental elongate; 2 lower labials, first very large, second small; no postmental; 4 chin shields, all of which are in contact with a first lower labial; 243 annuli on body, 26 on tail; 17 (10 + 7) segments in a midbody annulus, the median ventral segment six times as broad as long; 6 anals; 0 preanal pores.

Coloration. Above, pale brown; below, white.

Measurements. Total length 120 (107 + 13) mm.

Distribution. **Sierra Leone:** Lagos. (Known only from the holotype in the Hamburg Museum).

Remarks. Obviously derived from *Amphisbaena leonina* of Tumbo Island, French Guinea, from which it differs in having 26 annuli (instead of 20) on tail; in 17 (instead of 24) segments in a midbody annulus, the median ventral segments being 6 (instead of less than 2) times as broad as long; absence (instead of 3-6) of preanal pores; and of doubtful consequence, no postmental, it having divided longitudinally to form 4 chin shields.

Its points of difference with the more specialized *feae* have been stated in the Synopsis of the Species in the genus.

Named for Herr P. de Grys of the Hamburg Museum who so kindly lent me the specimen for study.

¹ Probably of sexual significance only.

PLACOGASTER FEAE Boulenger

- 1906i. *Placogaster feae* Boulenger, Ann. Mus. Civ. Stor. Nat. Genova (3), 2, p. 203, fig. 3: Cassine River district, Portuguese Guinea.
 1910b. Werner, p. 42.
 1919. Schmidt, p. 601.

Description. Rostral moderate, triangular; nasal fused with first and second labials, preocular, ocular, prefrontal and frontal, forming a long suture with its fellow behind the rostral; no prefrontals; no frontal;

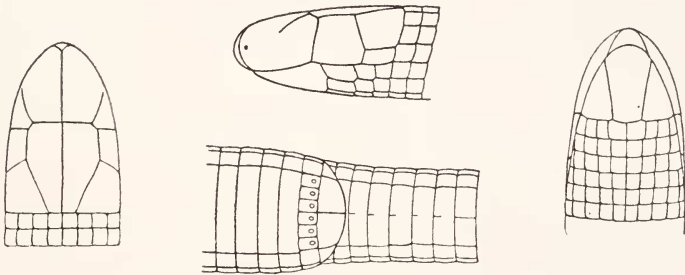


Fig. 27. *Placogaster feae* (Type after Boulenger).

a pair of elongate postfrontals; no parietals (obviously fused with postfrontals); no occipitals (obviously fused with postfrontals); no supra-ocular; no preocular; no ocular (its former position indicated by a groove), eye hidden; 1 (third) upper labial; 2 temporals, upper very large, forming an extensive suture with a postfrontal; mental elongate; 2 lower labials, first very large, second small; no postmental (obviously fused with mental); no chin shields; 252–258 annuli on body, 9–24 on tail; 19 (12 + 7) segments in a midbody annulus, the median ventral segment six times as broad as long; 4 anals; 6 preanal pores.

Coloration. Above, pale brown; below, white.

Measurements. Total length 175 (160 + 15) mm.

Distribution. **Portuguese Guinea:** Cassine River district. (Known only from the nine cotypes in the British and Genoa Museums).

Genus GEOCALAMUS

1880. *Geocalamus* Günther, Ann. Mag. Nat. Hist. (5), 6, p. 234 (type *modestus*).

Head compressed, snout laterally compressed but rounded; nostril lateral or slightly inferior, pierced in a small nasal; a gular fold; no vertebral line, a faint lateral line, no ventral line; pectoral segments slightly enlarged forming an angular series; preanal pores; tail cylindrical, obtuse.

Range. East Africa.

Synopsis of the Species

- 34-38 segments in a midbody annulus; 238-241 annuli on body, 29 on tail; 3 upper labials; 3-4 preanal pores *modestus*
(p. 402)
- 38-42 segments in a midbody annulus; 209-222 annuli on body, 21-23 on tail; 3 upper labials; 4 preanal pores *acutus*
(p. 403)

GEOCALAMUS MODESTUS Günther

1880. *Geocalamus modestus* Günther, Ann. Mag. Nat. Hist. (5), 6, p. 234: Mpwapwa, Ugogo, Tanganyika Territory.
- 1885e. Boulenger, p. 453, pl. xxiii, fig. 5.
- 1910b. Werner, p. 42.
- 1913c. Nieden, p. 75.
- 1923a. Loveridge, p. 20.
- 1923d. Loveridge, p. 851.
- 1923h. Loveridge, p. 949.
- 1924b. Loveridge, p. 11.
- 1937f. Loveridge, p. 495.
1881. *Amphisbaena modesta* Strauch, p. 412.

Description. Rostral large, its posterior angle inserted between the prefrontals; nasal distinct, or incompletely separated from first labial anteriorly, between rostral, first and second labials, and prefrontal; a pair of prefrontals; frontal moderate, distinct, or incompletely separated from the prefrontals; a pair of postfrontals; no parietals (being fused with postfrontals); a pair of rudimentary occipitals; no supra-ocular; no preocular; ocular moderate, eye distinct; 3 upper labials, first small, second and third larger, subequal; 3-4 temporals descending to the commissure of the mouth; mental moderate, subquadangular; 3 lower labials, first small, second and third subequal; postmental moderate; 4 chin shields in anterior row, 7 in posterior row, or outermost of the two rows fused to form an elongate sublabial; 238-241 annuli on body, 29 on tail; 34-38 (16-18 + 18-20) segments in a midbody annulus, the 2 median ventral segments nearly equilateral;

pectoral segments feebly differentiated, slightly longer than broad, forming an anteriorly-directed angular series; 6 anals; 3-4 preanal pores.

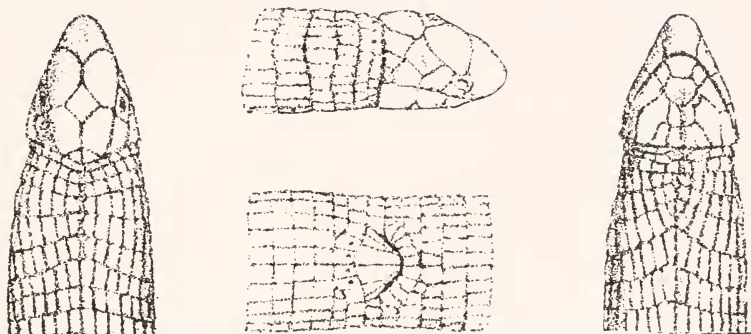


Fig. 28. *Geocalamus modestus* (Type after Boulenger).

Dentition. Premaxillary teeth 3, maxillaries 3-3, mandibulars 7-7.

Coloration. Above uniformly violet brown (plumbeous in life) except for the intersegmental grooves which are white; below pure white (somewhat transparent in life).

Measurements. Total length 274 (240 + 34) mm.

Enemies. A much chewed example was recovered from the stomach of a banded mongoose (*Mungos mungo colonus*) at Ushora.

Distribution. **Tanganyika Territory:** Ikikuyu and Mpwapwa in Ugogo; Ushora in Mkalama. (Known only from the three cotypes in the British Museum and two specimens in the Museum of Comparative Zoölogy).

GEOCALAMUS ACUTUS Sternfeld

1912c. *Geocalamus acutus* Sternfeld, Wiss. Ergebn. Deut. Zentral-Afrika-Exp. 1907-1908, 4, p. 209: Voi, Kenya Colony.

1913c. Nieden, p. 75.

1923d. Loveridge, p. 851.

1923h. Loveridge, p. 949.

1924b. Loveridge, p. 11.

1936j. Loveridge, p. 300.

1913. *Geocalamus noltei* Boettger, in Voeltzkow, Reise in Ostafrika, 3, p. 366, pl. xxvi, fig. 6: Moshi, Tanganyika Territory.

1922a. Mertens, p. 173.

Native names. *Kilimagonde* (Kisagalla and Kiteita); *moore* (Kiteita, but this name was also applied to the local caecilian).

Description. Rostral large, its posterior angle inserted between the prefrontals; nasal distinct, between rostral, first and second labials, and prefrontal; a pair of prefrontals; frontal moderate (said to give off a small azygous scale posteriorly in the type of *noltei*); a pair of

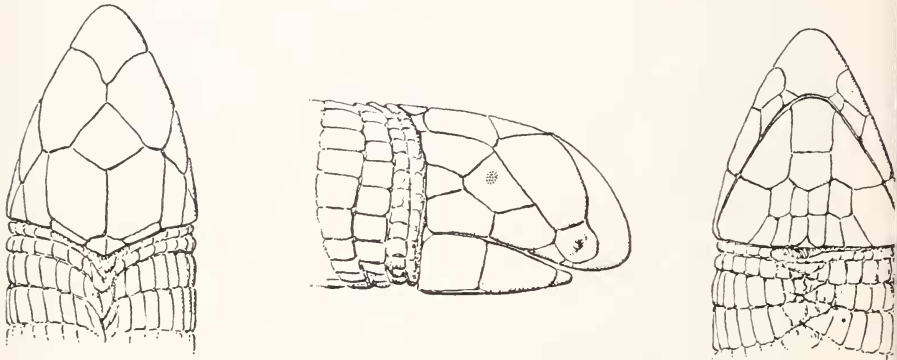


Fig. 29. *Geocalamus acutus* (Topotype ♀ M.C.Z. 41115).

postfrontals; no parietals (being fused with postfrontals); a pair of rudimentary occipitals present or absent; no supraocular; no preocular; ocular moderate, eye distinct or hidden; 3 upper labials, first small, second and third larger, subequal; 2-4 temporals descending to the commissure of the mouth; mental moderate, subquadrangular; 2 (very rarely 3) large lower labials, subequal or first smaller; postmental moderate; 4-5 chin shields in anterior row, 4-6 in posterior row; 209-222 annuli on body, 21-26 on tail (9 in injured type of *noltei*); 38-42 (18-20 + 20-22) segments in a midbody annulus, the 2 median ventral segments nearly equilateral; pectoral segments feebly differentiated, slightly longer than broad, forming an anteriorly-directed angular series; 6 (said to be 4 in type of *noltei*) anals, subject to much division; 4 preanal pores.

Coloration. Above uniformly violet brown (flesh-pink in life) except for the intersegmental grooves which are white; below pure white, or subcaudal segments mottled with brown.

Measurements. Total length of ♀, 281 (248 + 33) mm.

Breeding. No signs of gestation at Voi between April 7 and 13.

Diet. A large amphisbaenid held what was apparently a young worm or caecilian, another some skin of what may have been a caterpillar. In all there was much soil and grit which may have been ingested with food but possibly indicating that they swallow it like earthworms to obtain such nutriment as it may contain.

Habitat. In sandy soil on the flats at Msinga Estate not far from the Voi River.

Distribution. **Kenya Colony:** Samburu; Voi (restricted type locality). **Tanganyika Territory:** Moshi. (Known only from the two cotypes of *acutus* in the Berlin Museum, the type of *moltei*, No. 5453a, in the Senckenberg Museum, a Samburu specimen in the British Museum and sixteen topotypes in the Museum of Comparative Zoölogy).

Remarks. One of the cotypes appears in Sternfeld's paper as from "Deutsch Ostafrika, coll. Huebner". While it is possible that it may have been taken across the border, we know that Huebner lived at Kibwezi, west of Voi, and that most of the material collected by him was taken at Kibwezi. It seems at least possible that the second cotype came from one or other of these localities rather than from Tanganyika Territory.

With his accustomed kindness, Dr. R. Mertens has examined the type of *moltei* and reports that the four preanal pores are present, it is difficult to understand how Boettger overlooked them. In reply to my suggestion that the tail had suffered injury and the truncate portion had healed over, he says that this appears to be the case though it is difficult to speak with certainty. Elsewhere I have pointed out how difficult it is to distinguish between an original and a healed tail. Under these circumstances I have no hesitation in referring *moltei* to the synonymy of *acutus*, the paper was posthumously published sometime after Dr. Boettger's death.

Genus MONOPELTIS

1848. *Monopeltis* A. Smith, Ill. Zool. S. Africa, Rept., pl. lxxvii (type *capensis*).

1852. *Phractogonus* Hallowell, Proc. Acad. Nat. Sci. Philadelphia, p. 62 (type *galeatus*).

1865. *Monotrophis* Gray, Proc. Zool. Soc. London, p. 454 (type *capensis*).

Head depressed, snout projecting, sharp-edged; nostril inferior, pierced in a usually-elongate nasal; a gular fold; no vertebral line, a lateral line, no ventral line; pectoral segments enlarged but subject to subdivision; preanal pores present or absent; tail cylindrical, obtuse. Teeth anchylosed to the sides of the jaws.

Coloration. The coloration of all species in this genus being uniform flesh-pink in life, colorless in alcohol, except for slight dusky mottling above in a few species, it has not been considered necessary to repeat it for each species.

Range. Tropical and northern South Africa.

Remarks. Owing to the variability of members of this genus, I have had considerable difficulty in devising a synopsis which would reflect taxonomic and geographical relationships. In view of the fact that the majority of species are still only known from the types makes it essential that considerable caution should be exercised in using the synopsis.

Even in the major character of head shields we find *guentheri*, normally with one, has both one or two at Stanley Falls. This same species may exhibit a preocular on one side of the head but not on the other, nevertheless this character appears to have some value being consistently absent in whole groups of species. Pectorals, as is obvious from a study of Bocage's figure of *anchictae* and its synonym *okavangensis*, are subject to such wide variation as to be useless for key purposes.

With the exception of an anomalous series of *capensis* from Ombujomatamba discussed later, the largest number of one species from a single locality which has been available for study, is one of seven *capensis* from Klipkvil Farm, Transvaal. These exhibit a range of 42-51 (*i.e.* 10) segments in a midbody annulus, FitzSimons, however, has recorded a range of 14 in his type series of the allied *M. vernayi*, and for its whole range it appears probable that *M. c. capensis* has a variability of 16.

Following Boulenger (1885e, p. 453, footnote) I count the longitudinal rows of annular rings from the back of the head to above the anus. In this character the seven Klipkvil specimens showed a range of 22, all the records of *M. c. capensis* together give 36, which does not seem unreasonable when compared with the older and better-known species from the west where we find *galeatus* with 34 and *anchictae* with a variability of 32. The number of annuli on the tail appears much less variable with 4 as a maximum range except in *galeatus* where I expect the higher count may be the result of differing methods or typographical errors.

It is interesting to note that all *Monopeltis* north of the Zambesi have 13 or more annuli on the tail, while all those south of the river have 12 or less. Unfortunately when an amphisbaenid loses the end of its tail the tip becomes rounded off so much like that of an intact

tail that only the most careful comparison reveals that the unexpectedly low count of annuli is really the result of an injury.

Synopsis of the Species

(For reasons explained in the foregoing remarks, in applying this synopsis a range of 15 segments in a midbody annulus, of 36 annuli on body, of 4 on tail, may be anticipated for every species.)

- I. Two large shields covering the head (see *guentheri* and *c. capensis* also).
- A. No preocular (see *jugularis* also).
- 70 segments in a midbody annulus; 289 annuli on body, 12 on tail; 1-1 preanal pores *mauricei*
(p. 408)
- 40-54 segments in a midbody annulus; 198-224 annuli on body, 10-11 on tail; 0-0 preanal pores *vernayi*
(p. 409)
- 36-46 segments in a midbody annulus; 182-222 annuli on body, 7-12 on tail; 0-0 or 1-1 preanal pores *anchietae*
(p. 410)
- 42 segments in a midbody annulus; 289 annuli on body, 22 on tail; 0-0 preanal pores *remaclei*
(p. 412)
- 30 segments in a midbody annulus; 234 annuli on body, 18 on tail; 1-1 preanal pores; no loreal *scalper*
(p. 413)
- B. A preocular (sometimes absent in *jugularis* and *galeata*).
- 32 segments in a midbody annulus; 227-233 annuli on body, 18-19 on tail; 0-0 preanal pores; a loreal *vanderysli*
(p. 414)
- 34 segments in a midbody annulus; 215 annuli on body, ? on tail (damaged); 0-0 preanal pores *gerardi*
(p. 415)
- 30-36 segments in a midbody annulus; 206-215 annuli on body, 13-17 on tail; 0-0 preanal pores *jugularis*
(p. 416)
- 18 segments in a midbody annulus; 195-229 annuli on body, 17-22 on tail; 0-0, 1-1, or 2-2 preanal pores *galeata*
(p. 417)
- II. One large shield covering the head (sometimes two in *guentheri* and *c. capensis*).
- A. A preocular (sometimes absent in *guentheri*).
- 28-38 segments in a midbody annulus; 246-254 annuli on body, 25-28 on tail; 3-3 or 4-4 preanal pores *guentheri*
(p. 419)

- 32 segments in a midbody annulus; 276 annuli on body, 29 on tail; 5-5 preanal pores. *shouitedeni*
(p. 420)
- 30-32 segments in a midbody annulus; 227 annuli on body, 19 on tail; 0-0 preanal pores. *lujae*
(p. 421)
- B. No preocular.
- 52-54 segments in a midbody annulus; 239-264 annuli on body, 10-11 on tail; 1-1 preanal pores. *c. gazei*
(p. 422)
- 40-56 segments in a midbody annulus; 194-230 annuli on body, 8-12 on tail; 0-0 or 1-1 preanal pores. *c. capensis*
(p. 423)
- 42-44 segments in a midbody annulus; 271-273 annuli on body, 9-11 on tail; 1-1 preanal pores. *habenichti*
(p. 426)
- 34 segments in a midbody annulus; 193 annuli on body, 11 on tail; 1-1 preanal pores; 3 lower labials. *decosteri*
(p. 426)
- 32-34 segments in a midbody annulus; 198-204 annuli on body, 11-12 on tail; 1-1 preanal pores; 2 lower labials (as all other members of the genus have 3, perhaps *sphenorhynchus* represents an individual aberration, in this case *decosteri* would become a synonym) . . .
sphenorhynchus
(p. 427)

MONOPELTIS MAURICEI Parker

1935a. *Monopeltis mauricei* Parker, Ann. Mag. Nat. Hist. (10), 15, p. 582, figs. 1-2: Monjalatsela, near Ghanzi, Bechuanaland Protectorate.

Description. Two large shields covering the head, the anterior once and a half times as long as the posterior; a pair of occipitals; no pre-

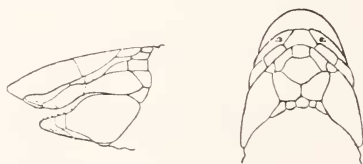


Fig. 30. *Monopeltis mauricei* (Type after Parker).

ocular; ocular small, eye indistinguishable; rostral separating the nasals, not bordering the nostrils; nasals elongate, reaching the ocular; 3 upper labials, third largest; mental small; postmental large, pentagonal, in contact with anterior lower labial; 2 chin shields, in contact

with all 3 lower labials; 289 annuli on body, 12 on tail; 70 (40 + 30) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 6 pectorals; 4 anals; 1-1 preanal pores.

Dentition. Premaxillary tooth 1; maxillaries 1-1; mandibulars 6-6.

Measurements. Total length 132 (127 + 5) mm.

Distribution. **Bechuanaland Protectorate:** Monjalatsela near Ghanzi. (Known only from the ♀ type (No. 1933.9.9.14) in the British Museum).

MONOPELTIS VERNAYI FitzSimons

1932. *Monopeltis vernayi* FitzSimons, Ann. Transvaal Mus., **15**, p. 36: Gomodimo, Kalahari, Bechuanaland Protectorate.

1935b. FitzSimons, p. 354, figs. 15-16.

Description. Two large shields covering the head, the anterior slightly longer than the posterior; a pair of occipitals; no preocular;

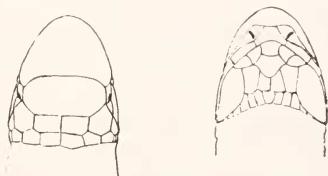


Fig. 31. *Monopeltis vernayi* (Type after FitzSimons).

ocular small, eye distinct; rostral separating the nasals, not bordering the nostrils; nasals elongate; 3 upper labials, third largest; mental small; postmental large, pentagonal, in contact with anterior lower labials; 4 chin shields, outer in contact with all 3 lower labials though barely with the anterior; 198-224 annuli on body, 10-11 on tail; 40-54 (22-28 + 18-26) segments in a midbody annulus, the 2 median ventral segments broader than long; 4-6 pectorals; 4 anals; 0-0 preanal pores.

Measurements. Total length 243 (231 + 12) mm.

Habitat. Excavated in the process of digging out gerbil burrows in typical Kalahari sand veld.

Distribution. **Bechuanaland Protectorate:** Gomodimo and Kuke. (Known only from the type (T.M. 14468) and paratype (F.M. 17268) in the Transvaal and Field Museums respectively).

Remarks. This species is of very doubtful status for reasons stated under *M. c. capensis*.

MONOPELTIS ANCHIETAE (Bocage)

- 1873c. *Lepidosternon (Phractogonus) Anchietae* Bocage, Journ. Sci. Lisboa, **4**, p. 247, figs. 1-4: Humbe, Cunene River, Mossamedes, Angola.
- 1885e. *Monopeltis anchietae* Boulenger, p. 458.
- 1895a. Bocage, p. 28, pl. vii, figs. 1a-1c.
- 1897a. Bocage, p. 194.
- 1910a. Hewitt, p. 60.
- 1910b. Werner, p. 34.
- 1911b. Sternfeld, p. 403.
- 1911d. Sternfeld, p. 26.
- 1937b. Monard, p. 65.
- 1910a. *Monopeltis leonhardi* Werner, Denks. Med.-Nat. Ges. Jena, **16**, p. 328, pl. vi, figs. 2a-2c: Between Kgekong and Kang, Bechuanaland Protectorate.
- 1910b. Boulenger, p. 473.
- 1910b. Werner, p. 34.
- 1911d. Sternfeld, p. 26.
- 1910a. *Monopeltis quadriscutata* Werner, Denks. Med.-Nat. Ges. Jena, **16**, p. 328: Neitsas Farm, Grootfontein, South West Africa.
- 1910b. Boulenger, p. 473.
- 1910b. Werner, pp. 33, 38, 39.
- 1911d. Sternfeld, p. 26.
- 1915c. Werner, p. 340.
1938. FitzSimons, p. 194.
1931. *Monopeltis okavangensis* Monard, Bull. Soc. Neuchatel Sci. Nat., **55**, p. 95, fig. 5: Kakindo (Caquindo) & Villa da Ponte, Angola.
- 1937b. Monard, pp. 65, 68, fig. 3, no 2.
- 1937b. *Monopeltis devisi* Monard, Arqu. Museu Bocage, **8**, pp. 65, 69, fig. 3, no. 3: Mupa, Angola.

Description. Two large shields covering the head, the anterior much longer than the posterior; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral separating the nasals, not bordering the nostrils; nasals elongate, not reaching the ocular; 3 upper labials, third largest; mental small; postmental large, very variable, subhexagonal, flanked on either side by a small scale (*anchietae*), or transversely elongate and in contact with the first and second lower labials (*leonhardi*); 2-4 chin shields, outer in contact with second and third, or only third, or separated from all 3 lower labials as in the type of *anchietae*; ¹182-222 annuli on body, 7-12 on tail (7 *vide* FitzSimons, 1938, p. 194); 36-46 (20-26 + 16-20) segments in a midbody annulus,

¹175 in type of *devisi*, possibly attributable to a difference in method of counting.

the 2 median segments broader than long; 4-6 pectorals; 4-5 anals; 0-0 or 1-1 preanal pores.

Measurements. Total length 284 (271 + 13) mm.

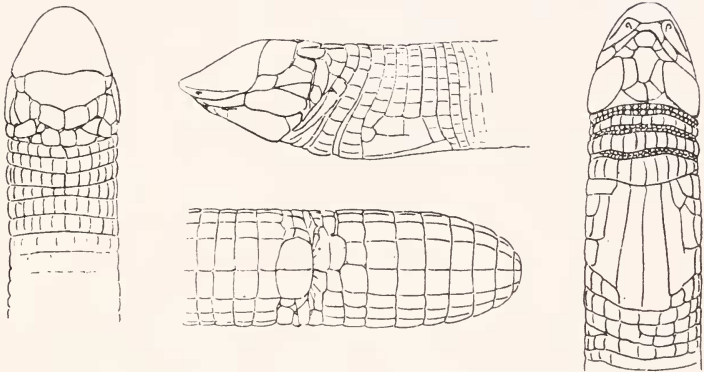


Fig. 32. *Monopeltis anchietae* (Type after Bocage).

Habitat. FitzSimons records his Waterberg specimen as having been "taken in moist loamy soil under stone at foot of mountains."

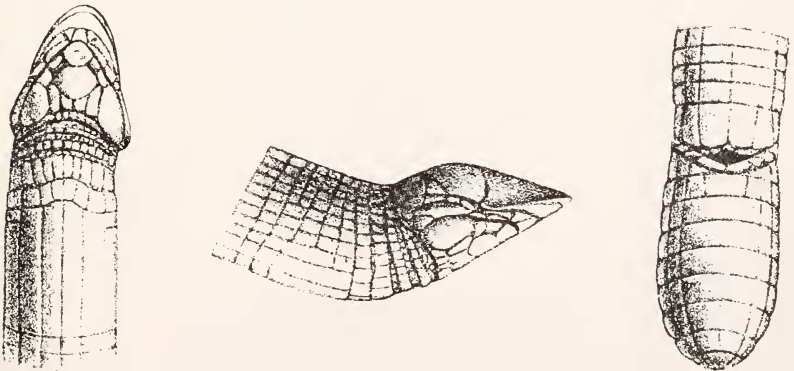


Fig. 33. *Monopeltis anchietae* (Type of *leonhardi* after Werner).

Distribution. **Bechuanaland Protectorate:** Kgokong to Kang; Palapye. **Cape Province:** Daniels Kuil near Kimberly; Little Namaqualand. **South West Africa:** Bethanien; Gobabis; Neitsas Farm;

Grootfontein district; Okahandja; Okavango; Waterberg. **Angola:** Humbe; Kakindo (Caquindo); Mupa; Villa da Ponte.

Remarks. As may be seen from the accompanying reproductions of Bocage's figures of the type of *anchietae*, there can be little doubt that the species was based on an aberrant individual. The describing

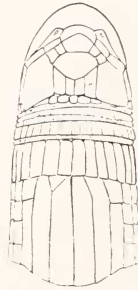


Fig. 34. *Monopeltis anchietae* (Type of *okavangensis* after Monard).

of *okavangensis* and *devisi* by Dr. Monard may be attributed to the overlooking of this and to the inadequate comparative material at his disposal. The relation of *anchietae*, as here understood, to *vernayi* and *capensis* is discussed under the latter.

MONOPELTIS REMACLEI Witte

1933c. *Monopeltis Remaclei* Witte, Revue Zool. Bot. Afr., **23**, p. 168, fig. 1:
Lukulu, near Kiambi, Katanga, Belgian Congo.

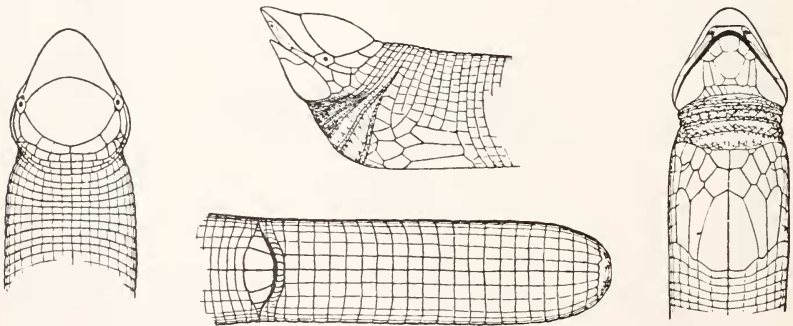


Fig. 35. *Monopeltis remaclei* (Type after Witte).

Description. Two large shields covering the head, the anterior much shorter than the posterior; a pair of occipitals; no preocular;

ocular small, eye distinguishable; rostral separating the nasals, bordering the nostrils; nasals elongate, not reaching the ocular; 3 upper labials, second longest, third highest; mental small; postmental large, pentagonal, in contact with the first and second lower labials; 5 chin shields, outer in contact with the second and third lower labials; ¹289 annuli on body, 22 on tail; 42 (26 + 16) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 6 pectorals; 4 anals; 0-0 preanal pores.

Measurements. Total length 560 (505 + 55) mm.

Distribution. **Belgian Congo:** Katanga: Lukulu near Kiambi. (Known only from the type (R.G. 8692) in the Congo Museum, Tervuren).

MONOPELTIS SCALPER (Günther)

1876. *Phractogonus scalper* Günther, Proc. Zool. Soc. London, p. 678, fig.:
Angola.

1881. *Lepidosternum scalprum* Strauch, p. 469.

1885e. *Monopeltis scalper* Boulenger, p. 457, pl. xxiv, fig. 4.

1895a. Bocage, p. 29.

1910b. Werner, p. 34.

Description. Two large shields covering the head, the anterior slightly shorter than the posterior; a pair of occipitals; no loreal; no

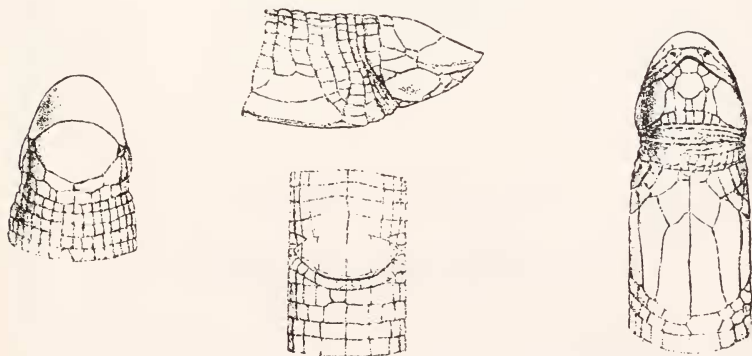


Fig. 36. *Monopeltis scalper* (Type after Boulenger).

preocular; ocular small, eye distinct; rostral separating the nasals, not quite bordering the nostrils; nasals elongate, apparently not reaching

¹389 in the original was a misprint, this suggestion has been confirmed by Dr. de Witte.

the ocular; 3 upper labials, third largest; mental small; postmental large, pentagonal, in contact with the first and second lower labials; 5 chin shields, outer in contact with the second and third lower labials; 234 annuli on body, 18 on tail; 30 (16 + 14) segments in a midbody annulus, the 2 median ventral segments much broader than long; 6 pectorals; 4 anals; 1-1 preanal pores.

Dentition. Premaxillary tooth 1; maxillaries 3-3; mandibulars 6-6.

Measurements. Total length 319 (290 + 29) mm.

Distribution. **Angola.** (Known only from the type in the British Museum).

Remarks. When more material is available for study, the possibility of *vanderysti* and *lujae* being aberrations of *scalper* should not be overlooked.

MONOPELTIS VANDERYSTI Witte

1922a. *Monopeltis Vanderysti* Witte, Revue Zool. Afr., 10, p. 66, pl. i, fig. 1:
Wombali, Kwango district, Belgian Congo.

Description. Two large shields covering the head, the anterior slightly shorter than the posterior; a pair of occipitals; a loreal in ad-

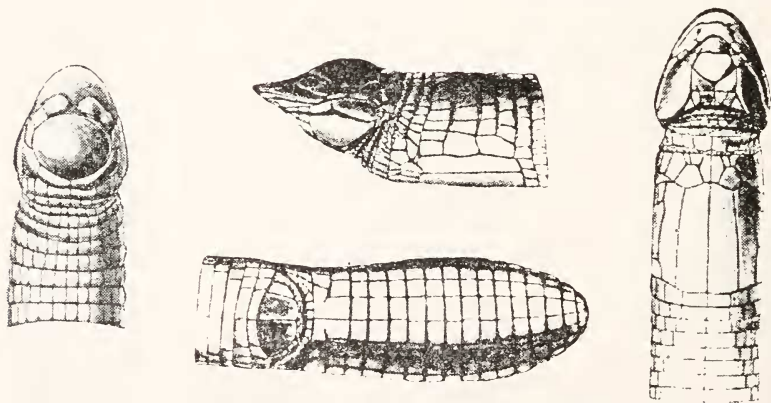


Fig. 37. *Monopeltis vanderysti* (Type after Witte).

vance of the preocular; ocular small, eye indistinguishable; rostral separating the nasals, bordering the nostrils; nasals elongate, not reaching the preocular; 4 upper labials, fourth largest; mental small; postmental large, pentagonal, in contact, even though barely, with all 3 lower labials; 2 chin shields, in contact with the third lower

labial; 227-233 annuli on body, 18-19 on tail; 32 (20 + 12) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 4-6 pectorals; 4 anals; 0-0 preanal pores.

Measurements. Total length 390 (365 + 25) mm.

Distribution. **Belgian Congo:** Kasai; Lake Leopold II; Leveville and Wombali in the Kwango district. (Known only from the four cotypes in the Congo Museum, Tervueren).

Remarks. Separable from *scalper* by the presence of a preocular and a loreal (called second preocular by Witte), concealed eye, 4 upper labials, and no preanal pores. See also remarks under *lujae* which may prove to be a synonym.

MONOPELTIS GERARDI Boulenger

1913a. *Monopeltis Gerardi* Boulenger, Revue Zool. Afr., **3**, p. 392, figs. -: Kikondja, Katanga, Belgian Congo.

Description. Two large shields covering the head, the anterior slightly longer than the posterior; a pair of occipitals; a preocular; ocular small, eye distinct; rostral separating the nasals, not bordering



Fig. 38. *Monopeltis gerardi* (Type after Boulenger).

the nostrils; nasals elongate, reaching the preocular; 3 upper labials, third largest; mental small; post-mental large, subcordiform, in contact with the first and second lower labials; 4 chin shields, outer in contact with the second and third lower labials; 215 annuli on body, ? on tail (damaged); 34 (18 + 16) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 6 pectorals; 4 anals; 0-0 preanal pores.

Measurements. Total length 170+ mm. (tail damaged).

Distribution. **Belgian Congo:** Kikondja in Katanga. (Known only from the type in the Congo Museum, Tervueren).

Remarks. In view of its damaged tail, the assignment of *gerardi* to *Monopeltis* must remain uncertain. Dr. de Witte informs me that there are only 5 annuli left on the tail. Boulenger compared it with *gigantea* which is now referred to the genus *Dalophia*. The only difference from *jugularis*, from whose range it is separated by over a thousand miles, appears to be in the pectorals not being broken up.

MONOPELTIS JUGULARIS Peters

- 1880a. *Monopeltis (Phractogonus) jugularis* Peters, Monatsb. Akad. Wiss. Berlin, p. 219, pl. —, fig. 1: West Africa.
- 1885e. Boulenger, p. 459.
- 1890a. Müller, p. 284.
- 1910a. Nieden, p. 235, fig. 1.
- 1910b. Werner, p. 34.
1919. Schmidt, p. 599.
1881. *Lepidosternon jugulare* Strauch, p. 469.
1881. *Lepidosternon Koppenfelsii* Strauch, Mém. Biol. Acad. Sci. St. Pétersbourg, **11**, p. 469: French Congo.
- 1885d. *Monopeltis capensis* (not of Smith) Müller, p. 781.
- 1885e. *Monopeltis koppenfelsii* Boulenger, p. 459.
- 1900b. Boulenger, p. 448.
- 1910b. Werner, p. 34.
- 1893d. *Monopeltis semipunctata* Boettger, Mitt. Geogr. Ges. Naturh. Mus. Lübeck (2), **5**, p. 89: Cameroon.
1897. Sjöstedt, p. 34.
1898. Werner, p. 207.
- 1902c. Tornier, p. 674.
- 1910b. Werner, pp. 33, 38, 39.

Description. Two large shields covering the head, the anterior equal to or slightly longer than the posterior; a pair of occipitals; preocular present (*koppenfelsii*) or absent (*jugularis*, *semipunctata*); ocular small, eye distinct or hidden; rostral separating the nasals, bordering the nostrils; nasal elongate, not reaching the preocular (when present); 3 upper labials, third largest; mental small; postmental large, subcordiform, in contact with the first and second lower labials; 4 chin shields, outer in contact with the second and third lower labials; 206–215 annuli on body, 13–17 on tail; 30–36 (16–19 + 14–18) segments in a midbody annulus, the 2 median ventral segments two to two and a half times as broad as long; pectorals broken up into large and small shields; 4–6 anals; 0–0 preanal pores.

Coloration. Above, brownish yellow anteriorly owing to a dark brown spot on each segment, posteriorly pale yellow; below yellowish.

Measurements. Total length 670 (640 + 30) mm.

Distribution. **French Cameroon:** Kribi. **French Congo:** (Gaboon). (Known from the types in the Berlin, Paris and Lübeck Museums, a Kribi specimen in the Berlin Museum, and three examples in the Hamburg Museum).

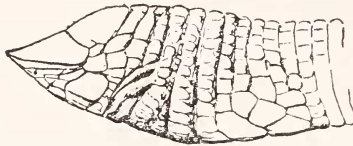


Fig. 39. *Monopeltis jugularis* (Type of *subpunctata* after Nieden).

Remarks. Nieden (1910a, p. 235), after direct comparison of the types of *jugularis* and *semipunctata* as well as with an intermediate specimen from Kribi, synonymized the two species, a conclusion at which I had independently arrived before reading Nieden's remarks. The upward-thrust head of *semipunctata* and the downward-thrust head of *jugularis* resulted in misleading their authors and the making of misstatements. Nieden's figure of the type of *semipunctata* shows a suture in front of the ocular indicative of where the preocular of *koppenfelsii* would be had not fusion taken place.

MONOPELTIS GALEATA (Hallowell)

1852. *Phractogonus galeatus* Hallowell, Proc. Acad. Nat. Sci. Philadelphia, p. 62, figs.: "Liberia" (error for Gaboon).
1856. Duméril, p. 424.
1857. Hallowell, p. 50 (corrects type locality).
1861. Duméril, p. 184.
1879. *Monopeltis (Phractogonus) magnipartitus* Peters, Monatsb. Akad. Wiss. Berlin, p. 276, footnote: Gaboon, i.e. French Congo.
1881. *Lepidosternum galeatum* Strauch, p. 465.
1881. *Lepidosternum Dumerilii* Strauch, Mém. Biol. Acad. Sci. St. Pétersbourg, **11**, p. 467: French Congo.
1881. *Lepidosternum magnipartitum* Strauch, p. 469.
- 1885e. *Monopeltis galeata* Boulenger, p. 457.
- 1910b. Werner, p. 34.
1919. Schmidt, pp. 599, 603.
- 1885e. *Monopeltis dumerilii* Boulenger, p. 457.

- 1900b. Boulenger, p. 448.
 1910b. Werner, p. 34.
 1913c. Werner, p. 15.
 1885e. *Monopeltis magnipartita* Boulenger, p. 458.
 1890d. Boulenger, p. 79.
 1892. Müller, p. 212.
 1900b. Boulenger, p. 448.
 1906i. Boulenger, p. 204.
 1910b. Werner, p. 34.
 1919. Schmidt, p. 599.
 1903. *Monopeltis unirostralis* Mocquard, Bull. Mus. Paris, **9**, p. 210: French Congo.
 1910b. Werner, p. 34.
 1919. Schmidt, pp. 599, 603.
 1903. *Monopeltis Boveei* Mocquard, Bull. Mus. Paris, **9**, p. 211: French Congo.
 1910b. Werner, p. 34.
 1919. Schmidt, p. 599.

Description. Two large shields covering the head, the anterior equal to, or shorter than, the posterior; a pair of occipitals; preocular present or absent; ocular moderate or small, eye indistinguishable; rostral *undivided*, grooved anteriorly, separating the nasals, bordering the nostrils; nasals elongate, not reaching the preocular (when present); 3 (*not* 5) upper labials, third largest; mental moderate; postmental large, subcordiform, in contact with the first and second lower labials; 5 chin shields, outer in contact with the second and third lower labials; 195-229 annuli on the body, 17-22 on tail; 16-18 (9-10 + 7-8) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 4 pectorals; 6 anals; 0-0, 1-1, or 2-2 preanal pores.

Dentition. Premaxillary teeth 2-2 or 3-3; maxillaries 3-3 or 4-4; mandibulars 5-5 or 6-6. (Based on recoumts kindly furnished by Dr. E. R. Dunn).

Coloration. Above and below, uniformly white except for some plumbeous pigmentation which forms an irregular vertebral line on the posterior two-thirds of the dorsum and tail, while on the latter it extends round in large blotches to the lower surface.

Measurements. Total length 501 (466 + 35) mm.

Distribution. **French Congo:** Fernand Vaz. **French Cameroon:** Sbang (Ssibanga). (Liberia was stated in error). (Known chiefly from the types (A. N. S. P. 9682-4) in the Philadelphia, Berlin and Paris Museums; and the "Ssibanga" example in the Hamburg Museum, which I have examined).

Remarks. Schmidt (1919, p. 603) has drawn attention to the errors in the original description of *galeata*; Mocquard (1903, p. 210) to those of Strauch whose descriptions were based on specimens he had not seen. Dunn informs me that Hallowell's figures were based on A.N.S.P. 9683.

MONOPELTIS GUENTHERI Boulenger

- 1885e. *Monopeltis guentheri* Boulenger, Cat. Lizards Brit. Mus., 2, p. 456, pl. xxiv, fig. 3: Congo.
- 1895a. Bocage, p. 29.
- 1897b. Boulenger, p. 277.
- 1910b. Werner, p. 33.
- 1917c. Chabanaud, p. 87.
- 1919g. Boulenger, p. 15.
- 1927d. Witte, p. 328.
- 1929c. Witte, p. 8.
- 1930b. Witte, p. 84.
- 1933m. Witte, p. 72.
- 1887c. *Monopeltis Boulengeri* Boettger, Zool. Anz., 10, p. 649: Kinshasa, near Stanley Pool, Belgian Congo.
- 1888a. Boettger, p. 24, pl. i, figs. 1a-1d.
- 1893a. Boettger, p. 78.
- 1895a. Bocage, p. 29.
- 1910b. Werner, p. 33.
- 1922a. Mertens, p. 173.

Description. One or two large shields covering the head, if two then the anterior much shorter than the posterior; a pair of occipitals; a supraocular present or absent; a preocular present (*boulengeri*) or absent (*guentheri*); ocular small, eye indistinguishable; rostral separating the nasals, not or only just bordering the nostrils; nasals elongate, reaching or not reaching the preocular (when present); 3 upper labials, second small, third largest; mental small; postmental large, heptagonal, in contact with the first and second lower labials; 4 chin shields, outer in contact with the second and third lower labials; 246-254 annuli on body, 25-28 on tail; 28-38 (16-22 + 12-16) segments in a midbody annulus, the 2 median ventral segments much broader than long; 4-6 pectorals; 6-8 anals; 3-3 or 4-4 preanal pores.

Dentition. Premaxillary tooth 1; maxillaries 2-2; mandibulars 6-6.

Measurements. Total length 308 (275 + 33) mm.

Distribution. **Belgian Congo:** Kinshasa; Kwamouth; Kwango River; Leverville; Stanley Falls; Stanleyville; Temvo near Mayumbe.

French Congo: Brazzaville near Stanley Pool. (The five cotypes of *guentheri* were originally in the British Museum, the holotype of *boulengeri* in the Senckenberg Museum, Frankfort a. Main).

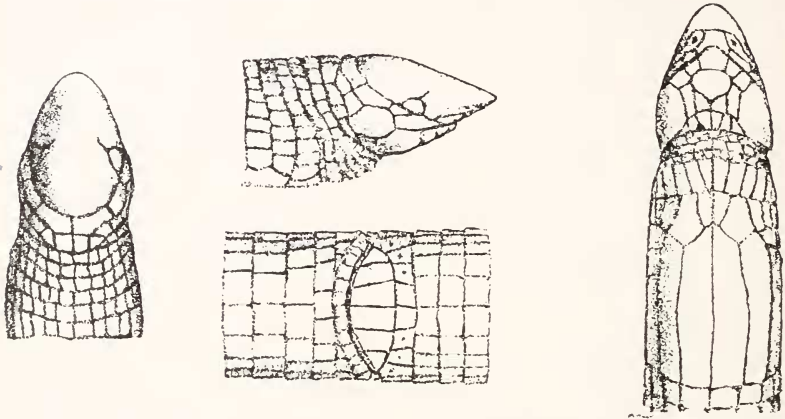


Fig. 40. *Monopeltis guentheri* (Type after Boulenger).

Remarks. The unique type of *M. boulengeri* came from the same general region as numerous examples of *guentheri*. It was differentiated by the presence of a preocular (the scale called by that name in Boulenger's description of *guentheri* is elsewhere called an ocular) the location of which was indicated by a suture in the figured type of *guentheri*. In an example (M.C.Z. 18015) received from the Paris Museum, labeled 'Congo', the right side of the head is *boulengeri*, the left *guentheri*. The annuli in the types of both species were the same, but there were 38 (instead of 28-32) segments in a midbody annulus of *boulengeri*. At Stanley Falls specimens occur with both one or two shields covering the head.

MONOPELTIS SCHOUTEDENI Witte

1933c. *Monopeltis Schoutedeni* Witte, *Revue Zool. Bot. Afr.*, **23**, p. 170, fig. 2:

Kunungu, Lake Leopold II, Belgian Congo.

1933m. Witte, p. 73, figs. 1-4.

Description. One large shield covering the head; a pair of occipitals; a preocular; ocular small, eye indistinguishable; rostral separating the nasals, bordering the nostrils; nasals elongate, apparently not reaching

the ocular; 3 upper labials, second longest, third highest; mental small; postmental large, heptagonal, in contact with the first and second lower labials; 4 chin shields, outer in contact with the second and third lower labials; 276 annuli on body, 29 on tail; 32 (18 + 14) segments in a midbody annulus, the 2 median ventral segments two and a half times as broad as long; 6 pectorals; 8 anals; 5-5 preanal pores.

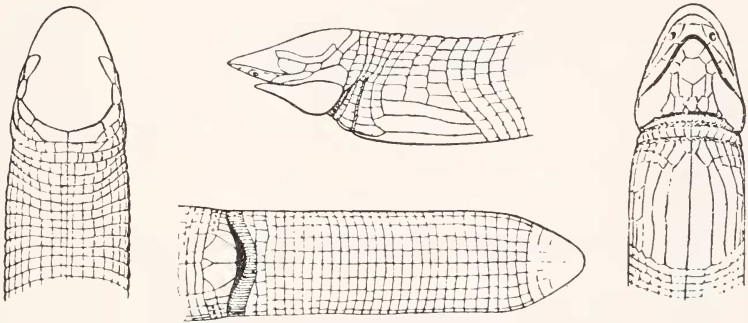


Fig. 41. *Monopeltis schoutedeni* (Type after Witte).

Measurements. Total length 350 (311 + 39) mm.

Distribution. **Belgian Congo:** Lake Leopold II: Kunungu. (Known only from the type in the Congo Museum, Tervueren).

Remarks. Though very closely related to *guentheri*, which also has been recorded from Lake Leopold II by Witte, it seems advisable to recognize *schoutedeni* for the present on the basis of its aggregate higher counts of annuli on body and tail, anals and pores, though none of these taken alone might be expected to be beyond the probable range of *guentheri*. The difference in pores is bridged by M.C.Z. 18015 with 4-4. The difference in appearance of the preocular is not considered of importance.

MONOPELTIS LUJAE Witte

1922a. *Monopeltis Lujae* Witte, *Revue Zool. Afr.*, **10**, p. 67, pl. i, fig. 2: Lubué, Kasai district, Belgian Congo.

Description. One large shield covering the head; a pair of occipitals; a preocular; ocular small, eye indistinguishable; rostral separating the nasals, bordering the nostrils; nasals elongate, reaching the preocular; 3 upper labials, third largest; mental small; postmental large, penta-

gonal, in contact with the first and second lower labials; 4 chin shields, outer in contact with the second and third lower labials; 227 annuli on body, 19 on tail; 30-32 (20 + 10-12) segments in a midbody annulus, anteriorly the median ventral segments tend to fuse into transverse bands recalling the ventral shields of snakes; 6 pectorals; 4 anals; 0-0 preanal pores.

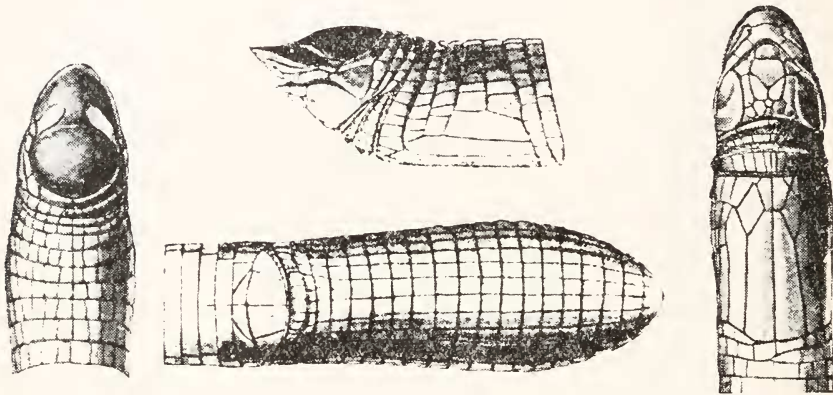


Fig. 42. *Monopeltis lujae* (Type after Witte).

Measurements. Total length 350 (322 + 28) mm.

Distribution. **Belgian Congo:** Kasai district: Lubué. (Known only from the type in the Congo Museum, Tervueren).

Remarks. In view of the fact that in *M. guentheri* we find that either a single or pair of shields may be present on the head, it appears highly probable that *lujae* will prove to be synonymous with *vanderysti* which, however, retains two large head shields still unfused, and which possesses a loreal unfused with head shield or preocular. Good series of both species from their type localities are badly needed to settle this point.

MONOPELTIS CAPENSIS GAZEI FitzSimons

1937b. *Monopeltis capensis gazei* FitzSimons, Ann. Transvaal Mus., **17**, p. 278, figs. 10-12: Junction of Magalakwin and Limpopo Rivers, Zoutpansberg district, Transvaal.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral separating the

nasals, not bordering the nostrils; nasals elongate; 3 upper labials, third largest; mental moderate; postmental moderate, pentagonal, in contact with the first lower labial; 2 chin shields, in contact with all 3

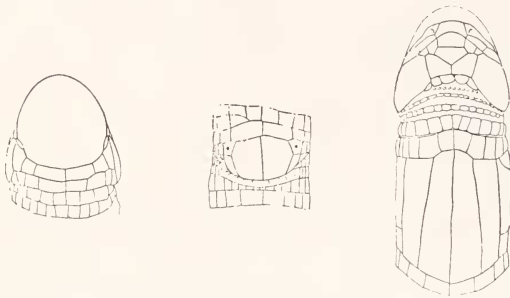


Fig. 43. *Monopeltis capensis gazei* (Type after FitzSimons).

lower labials; 239–264 annuli on body, 10–11 on tail; 52–54 (32 + 20–22) segments in a midbody annulus, the 2 median ventral segments almost two times as broad as long; 4–6 pectorals; 4 anals; 1–1 preanal pores.

Measurements. Total length 286 (272.8 + 13.2) mm.

Distribution. **Transvaal:** Zoutpansberg district: Magalakwin and Nwanedzi Rivers. (Known only from the type (T. M. 13342) and para-type (T. M. 3477) in the Transvaal Museum).

MONOPELTIS CAPENSIS CAPENSIS Smith

1848. *Monopeltis capensis* A. Smith, Ill. Zool. S. Africa, Rept., pl. lxxvii: 24° south latitude, South Africa.
- 1867b. Peters, p. 235.
- 1869b. Peters, p. 661.
- 1873b. Bocage, p. 216.
1882. Peters, p. 89.
- 1885e. Boulenger, p. 455, pl. xxiv, figs. 1a–1d.
- 1895a. Bocage, p. 28.
1898. Slater, p. 104.
- 1910b. Boulenger, p. 472.
- 1910a. Hewitt, pp. 60, 69.
- 1910a. Werner, p. 328.
- 1910b. Werner, p. 33.
- 1911b. Sternfeld, p. 403.

- 1911d. Sternfeld, p. 26, figs. 25-26.
 1913. Hewitt & Power, p. 155.
 1914a. Nieden (1913), p. 450.
 1915c. Werner, p. 340.
 1925b. Flower, p. 949.
 1936c. Parker, p. 140.
 1937a. FitzSimons, p. 267.
 1937b. Monard, p. 65.
 1865. *Monotrophis capensis* Gray, p. 454.
 1872. Gray, p. 41.
 1873. Gray, p. 118.
 1881. *Lepidosternon capense* Strauch, p. 462.

Description. One or two (see *Remarks*) large shields covering the head; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral separating the nasals, not bordering the nostrils; nasals elongate, not reaching the ocular; 3 upper labials, third largest;

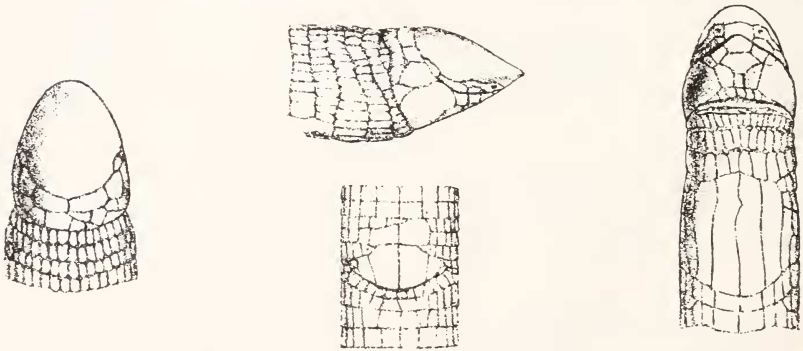


Fig. 44. *Monopeltis capensis capensis* (Type after Boulenger).

mental moderate; postmental large, pentagonal, in contact with the anterior lower labials; 2, 3 or 4 chin shields, outer in contact with all 3 lower labials though barely with the anterior; 194-230 annuli on body, 8-12 on tail; 42-56 (40 *vide* Werner) (22-28 + 20-28) segments in a midbody annulus, the 2 median ventral segments slightly broader than long; 4-6 pectorals; 4-6 anals; 0-0 or 1-1 preanal pores.

Dentition. Premaxillary tooth 1; maxillaries 2-2 (Parker) or 3-3; mandibulars 7-7.

Measurements. Total length 350 (330 + 20) mm.

Longevity. 1 year, 10 months, 27 days. (Flower).

Habitat. The Humbe series were taken at a depth of from 15 to 20 centimetres.

Distribution. **Transvaal:** Klipvil Farm; Nylstroom; Vygeboompoort. **Cape Province:** Fort Richmond; Kimberly; Little Namaqualand. **South West Africa:** Aub to Klein Nauas; Gobabis; Grootfontein; Naumtoni to Outgo; Okahandja; Otjimbingue; Omatjenne; Ombujomatemba; Rehoboth; Windhuk. **Angola:** Humbe, Kunene River.

Müller's (1885d, p. 701) record from Gaboon is referred to *jugularis*. Peters' (1854, p. 620) became the type of *sphenorhynchus*.

Remarks. A series of eight amphisbaenids from Ombujomatemba, near Waterberg, received from Herr. W. Hoesch since this paper was written, prove to be of exceptional taxonomic interest. The three juveniles (M.C.Z. 43152-4), 106 to 120 mm. in length, agree with *vernayi* and *anchietae* in possessing two large shields on the head, in addition, though a point of no consequence, no preanal pores are distinguishable. Otherwise they entirely agree with the single-shielded adults, ranging from 205 to 276 mm. in length, with whom they are undoubtedly specifically identical. The variation displayed by these eight lizards is: 3-4 chin shields; 194-206 annuli on body, 10-11 on tail; 49-56 segments in a midbody annulus; 4-6 pectorals; 0-1 preanal pores.

As *M. anchietae* occurs at Waterberg (M.C.Z. 39907-9), does this material imply that hybrids between *anchietae* and *capensis* occur? A comparison of the two ranges as given under 'Distribution' shows them to be contiguous and not infrequently both species have been recorded from the same or adjacent localities, *capensis* alone, however, has been taken in the Transvaal. Further examination of the data reveals that 36 and 38 midbody segments are as rare for *anchietae* as are 52, 54 or 56 for *capensis*.

It does not mean that juveniles have always two cephalic shields for young *capensis* are frequently quite typical in possessing a single shield. It does appear as if we are dealing with a single species though at the present stage I do not contemplate taking so drastic a step. *M. vernayi* occupies an intermediate position between the two types and is almost certain to be synonymized with one or the other. If the ranges of all three are united, they would read: 40-50 (rarely 36-56) segments in a midbody annulus; 182-230 annuli on body, 8-12 on tail; 0-0 or 1-1 preanal pores.

MONOPELTIS HABENICHTI FitzSimons

1937b. *Monopeltis habenichti* FitzSimons, Ann. Transvaal Mus., **17**, p. 276, figs. 3-5: Lourenço Marques, Mozambique.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral separating the nasals, not bordering the nostrils, separated from anterior labial

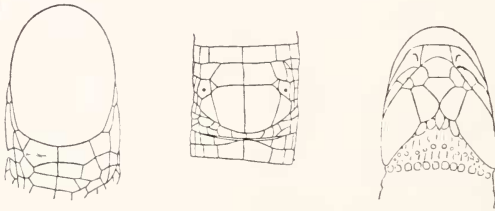


Fig. 45. *Monopeltis habenichti* (Type after FitzSimons).

by lower portion of nasal; nasals elongate; 3 upper labials, third largest; mental moderate; postmental moderate, pentagonal, in contact with anterior lower labial; 2 chin shields, in contact with all 3 lower labials; 271-273 annuli on body, 9-11 on tail; 42-44 (24-26 + 18) segments in a midbody annulus, the 2 median ventral segments once and two-third times as broad as long; 4-6 pectorals; 4 anals; 1-1 preanal pores.

Measurements. Total length 245 (236.5 + 8.5) mm.

Distribution. **Mozambique:** Lourenço Marques. (Known only from the type (T. M. 3400) and three paratypes (T. M. 3323, 3401-2) in the Transvaal Museum).

MONOPELTIS DECOSTERI Boulenger

1910b. *Monopeltis decosteri* Boulenger, Ann. S. African Mus., **5**, pp. 472, 495: Delagoa Bay, Mozambique.

1937b. V. FitzSimons, p. 277, figs. 6-9.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral separating the nasals, not bordering the nostrils; nasals elongate, not reaching the ocular; 3 upper labials, third largest; mental moderate; postmental large, pentagonal, in contact with the first and second lower labials;

2 chin shields, in contact with third lower labial; 193 annuli on body, 11 on tail; 34 (20 + 14) segments in a midbody annulus, the 2 median ventral segments slightly more than two times as broad as long; 4 pectorals; 2 anals; 1-1 preanal pores.

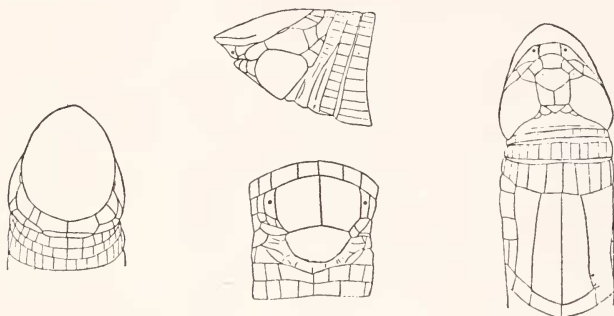


Fig. 46. *Monopeltis decosteri* (Type after FitzSimons).

Measurements. Total length 215 (205 + 10) mm.

Distribution. **Mozambique:** Delagoa Bay. (Known only from the type (S. A. M. 650) in the South African Museum).

Remarks. Differs only from *sphenorhynchus* in possessing the normal number of 3 lower labials.

MONOPELTIS SPHENORHYNCHUS Peters

1854. *Monopeltis capensis* (not of Smith) Peters, Ber. Akad. Wiss. Berlin, p. 620.
 1855. Peters, p. 49.
 1879b. *Monopeltis sphenorhynchus* Peters, Monatsb. Akad. Wiss. Berlin, p. 275: Inhambane, Mozambique (now restricted).
 1882. Peters, p. 87, pl. xiiiA, figs. 1-3.
 1885e. Boulenger, p. 455.
 1891a. Boulenger, p. 306.
 1896a. Bocage, p. 99.
 1910a. Hewitt, pp. 60, 70.
 1910b. Werner, p. 33.
 1881. *Lepidosternon sphenorhynchus* Strauch, p. 465.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral separating the nasals, not bordering the nostrils; nasals elongate, not reaching the ocular; 3 upper labials, third largest; mental moderate; postmental

large, pentagonal, in contact with anterior lower labials; 2-3 chin shields, outer in contact with *both* lower labials; 198-204 (see Remarks below) annuli on body, 11-12 on tail; 32-34 (18-20 + 14) segments in a midbody annulus, the 2 median ventral segments much broader than long; 4-6 pectorals; 4 anals; 1-1 preanal pores.

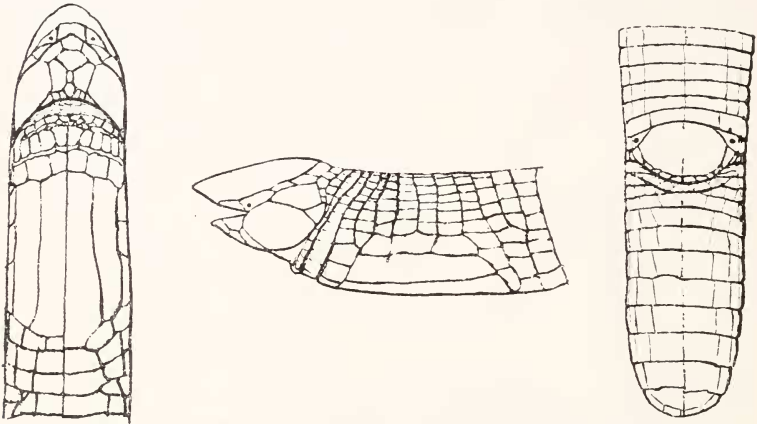


Fig. 47. *Monopeltis sphenorhynchus* (Type after Peters).

Dentition. Premaxillary 1; maxillaries 2-2; mandibulars 7-7 (?).

Measurements. Total length 258 (245 + 13) mm.

Distribution. **Mozambique:** Inhambane. **Nyasaland:** Shire Valley. (See Remarks below).

Remarks. Peters (1882, p. 88) mentions Angola in the text but omits it from the Habitat, as does Boulenger (1885e, p. 455). This together with the mention of 252 annuli on body suggests a misprint or some continued confusion with *capensis*.

The fact that this is the only species in the genus which is recorded as having only 2 lower labials, raises the question as to whether the few known examples of *sphenorhynchus* are not aberrant. Should this prove to be the case and the number of labials are inconstant, then it seems probable that *decosteri* would become a synonym.

Genus DALOPHIA

1865. *Dalophia* Günther, Proc. Zool. Soc. London, p. 454 (type *welwitschii*).

No preanal pores; tail cylindrical, abruptly truncate, ending in a callose pad. Otherwise characters as in *Monopeltis* with which genus it

was united by Boulenger (1885e, p. 454) when only the type species was known. Its members, however, form a natural group.

Coloration. With the exception of *longicauda*, the coloration of all species in the genus is uniformly flesh pink in life, colorless in alcohol. Under these circumstances it has not been considered necessary to repeat it for each species.

Range. Tropical and northern South Africa.

Synopsis of the Species

I. One or two large shields covering the head.

38-39 segments in the midbody annulus; 314-334 annuli on body, 23-24 on tail. *gigantea*
(p. 429)

II. One large shield covering the head.

34 segments in a midbody annulus; 271-275 annuli on body, 22-23 on tail. *welwitschii*
(p. 431)

30-32 segments in a midbody annulus; 320 annuli on body, 38 on tail. *longicauda*
(p. 432)

30 segments in a midbody annulus; 320-330 annuli on body, 43-45 on tail. *ellenbergeri*
(p. 433)

36 segments in a midbody annulus; 1223 annuli on body, 32 on tail. . . *jallae*
(p. 433)

28-34 segments in a midbody annulus; 290-328 annuli on body, 24-29 on tail. *pistillum*
(p. 434)

DALOPHIA GIGANTEA (Peracca)

1903. *Monopeltis giganteus* Peracca, Boll. Mus. Zool. Torino, **18**, No. 448, p. 1, fig. -: Congo.
1910b. Werner, p. 34.
1922a. *Monopeltis truncata* Witte, Revue Zool. Afr., **10**, p. 68, pl. i, figs. 3-3c: Kwango district, Belgian Congo.
1927c. Witte, p. 104.

Description. One or two large shields covering the head, if two then the anterior shorter than the posterior; 2 pairs of occipitals; a pre-ocular present or indicated; ocular small, eye distinguishable or indis-

¹ Professor O. Arcangeli informs me (L.ix.37) that the type cannot be located, but agrees that this number is almost certainly a misprint for 323. When the type is found and the description checked, it is possible that *jallae* may become a synonym of *pistillum*.

tinguishable; rostral elongate, not separating the nasals, bordering the nostrils; nasals elongate, extending upwards to the preocular; 3 upper labials, second longest, third highest; mental small, subquadrangular;

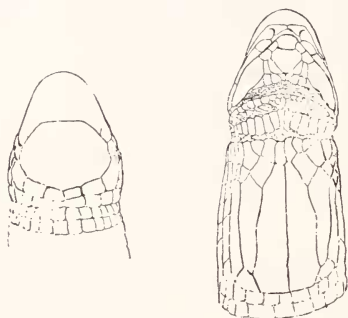


Fig. 48. *Dalophia gigantea* (Type after Peracca).

postmental large, pentagonal or heptagonal, almost or completely separating the inner pair of chin shields; 4 chin shields, outer in contact with the second and third lower labials; 314-334 annuli on body,

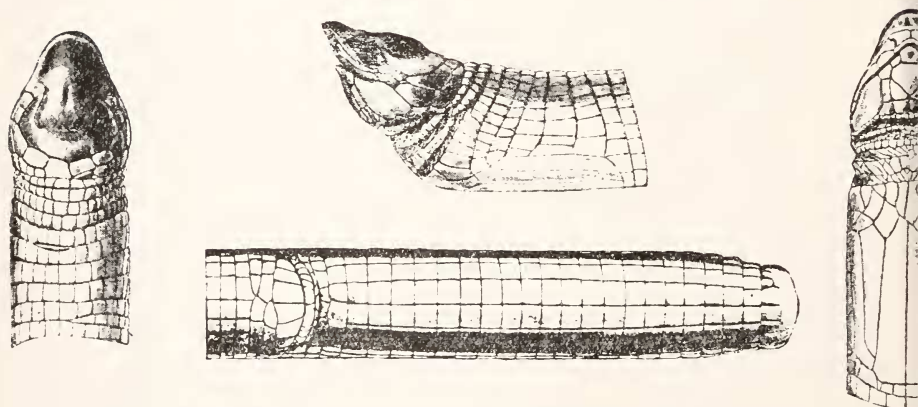


Fig. 49. *Dalophia gigantea* (Type of *truncata* after Witte).

23-24 on tail; 38-39 (20-21 + 18) segments in a midbody annulus, the 2 median ventral segments broader than long; 6 pectorals; 5-6 anals; 0-0 preanal pores.

Measurements. Total length of type of *gigantea* 650 (592 + 58) mm., of type of *truncata* 650 (590 + 60) mm.

Distribution. **Belgian Congo:** Kwango district; Popokabaka (Known only from the two cotypes of *gigantea* in the Turin Museum, and the type and second example of *truncata* in the Congo Museum, Tervueren).

Remarks. As has been shown in the case of *Monopeltis guentheri* and *M. c. capensis*, individuals of both these species with either a single or with two shields covering the head occur. As the types of both *gigantea* (two shields) and *truncata* (one shield) differ in no other important character it seems logical to unite them. Their essential data is as follows:

38-39 segments in a midbody annulus; 314-325 annuli on body, 23 on tail. . . .
gigantea
 38 segments in a midbody annulus; 334 annuli on body, 24 on tail. . . .
truncata

DALOPHIA WELWITSCHII Gray

1865. *Dalophia welwitschii* Gray, Proc. Zool. Soc. London, p, 454, figs. 7-8:
 Pungo Andongo, Angola.
 1872. Gray, p. 41.
 1872. Gray, p. 118.
 1879. Peters, p. 276, footnote.
 1885e. *Monopeltis welwitschii* Boulenger, Cat. Lizards Brit. Mus., 2, p. 456,
 pl. xxiv, fig. 2.
 1895a. Bocage, p. 29.
 1902a. Werner, p. 342.
 1910b. Werner, p. 33.
 1931b. Witte, p. 41.
 1937b. Monard, p. 65.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye indistinguishable; rostral small, triangular, separating the nasals, not bordering the nostrils; nasals elongate; 3 upper labials, third highest; mental moderate, quadrangular; postmental large, pentagonal, not separating the inner pair of chin shields; 4 chin shields, outer in contact with second and third lower labials; 271-275 annuli on body, 22-23 on tail; 34 (20 + 14) segments in a midbody annulus, the 2 median ventral segments much broader than long; 6 pectorals; 6 anals; 0-0 preanal pores.

Measurements. Total length 289 (265 + 24) mm.

Habitat. In a humid and muddy locality at Leverage.

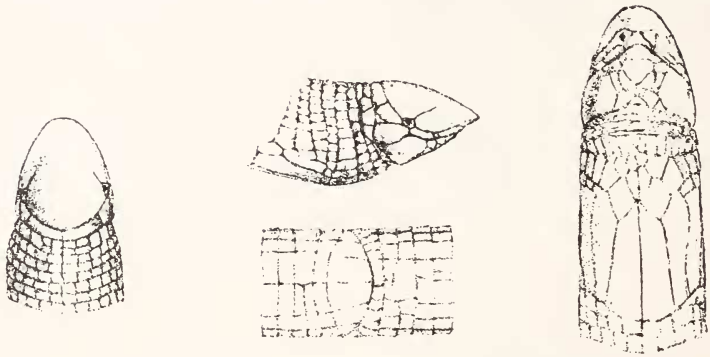


Fig. 50. *Dalophia welwitschii* (Type after Boulenger).

Distribution. **Angola:** Pungo Andongo. **Belgian Congo:** Kwango district: Leverage. Lower Congo. (Known only from the cotypes in the British Museum, and four other specimens).

DALOPHIA LONGICAUDA (Werner)

1915. *Monopeltis longicauda* Werner, Rept. Amph., in Michaelsen, Beitr. Kennt. Land- Susswass. Deut.-Südwestafrikas, **3**, p. 340: Okavango River, South West Africa.

Description. (Top of head missing); mental moderate, subquad-rangular; postmental large, subpentagonal, not separating the chin shields; 6 chin shields, outer in contact with the second and third lower labials; 320 (not 330) annuli on body, 38 (not 37) on tail; 30-32 (18 + 12-14) segments in a midbody annulus, the 2 median ventral segments two times as broad as long; 6 pectorals; 5 anals; 0-0 preanal pores.

Coloration. As in other members of the genus but when examined with a lens, the centre of each segment on the dorsal surface of the tail is seen to be a glossy enamel-like white.

Measurements. Total length 299 (247 + 52) mm.

Distribution. **South West Africa:** Okavanga River forming northern boundary. (Known only from the mutilated type (No. 4275) in the Hamburg Museum).

Remarks. Through the courtesy of the Director of the Hamburg Museum and Herr. de Grys, I have been able to reëxamine the type and write the above description involving several alterations from the original, including measurements.

If *ellenbergeri* can be maintained distinct on the sole basis of more numerous caudal annuli, it is at most an eastern race of *longicauda*.

DALOPHIA ELLENBERGERI (Angel)

1920b. *Monopeltis Ellenbergeri* Angel, Bull. Mus. Hist. Nat. Paris, **26**, p. 615; figs. 1-2: Lealui, Upper Zambesi, Northern Rhodesia.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye distinguishable; rostral small, triangular, not separating the nasals, not bordering the nostrils; nasals elongate, extending upwards to the ocular; 3 upper labials, second longest, third highest; mental moderate, subquadrangular; post-mental large, pentagonal, not separating the inner pair of chin shields; 4 chin shields, outer in contact with the second and third lower

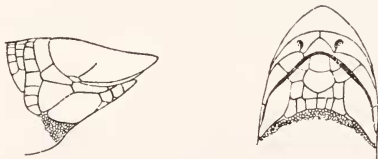


Fig. 51. *Dalophia ellenbergeri* (Type after Angel).

labials; 320-330 annuli on body, 43-45 on tail; 30 (18 + 12) segments in a midbody annulus, the 2 median ventral segments broader than long; 6 pectorals; 6 anals; 0-0 preanal pores.

Dentition. Premaxillary tooth 1; maxillaries 1-1; mandibulars ?.

Measurements. Total length 430 (350 + 80) mm.

Distribution. **Northern Rhodesia:** Lealui (Lialui), Upper Zambesi. (Known only from the three cotypes (P. M. 1920: 78-80) in the Paris Museum, Monard's (1931, p. 97) Kakindo material being referred to *pistillum*).

DALOPHIA JALLAE (Peracca)

1910. *Monopeltis jallae* Peracca, Boll. Mus. Zool. Torino, **25**, No. 624, p. 1, fig. —: Barotseland, Upper Zambesi, Northern Rhodesia.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye distinguishable; rostral small, triangular, not quite separating the nasals; 3 upper labials, second longest, third highest; mental moderate, subquadrangular; postmental large, pentagonal; ¹223 annuli on body, 32 on tail; 36 (22 + 14) segments in a midbody annulus, the 2 median ventral segments broader than long; 6 pectorals; 6 anals; 0-0 preanal pores.

Measurements. Total length 530 (460 + 70) mm.

Distribution. **Northern Rhodesia:** Barotseland, Upper Zambesi. (Known only from the type in the Turin Museum).

Remarks. Differs only from *pistillum* in the number of annuli on body and tail, if, as I suspect, these are erroneous, it would become a synonym of that species. In this connection it may be pointed out that both the types of *jallae* and *colobura* (a syn. of *pistillum*) were taken by the same missionary, the Rev. L. Jalla.

DALOPHIA PISTILLUM (Boettger)

1895. *Monopeltis pistillum* Boettger, Zool. Anz., **18**, p. 62: Zambesi.
 1910b. Werner, p. 33.
 1922a. Mertens, p. 173.
 1907j. *Monopeltis granti* Boulenger, Proc. Zool. Soc. London, p. 485, fig. 141: Beira, Mozambique.
 1910b. Boulenger, p. 473.
 1910a. Hewitt, p. 60.
 1910b. Werner, p. 33.
 1910b. *Monopeltis colobura* Boulenger, Ann. S. African Mus., **5**, pp. 473, 495: Sesheke, Barotseland, Northern Rhodesia.
 1914a. Nieden (1913), p. 450.
 1915c. Werner, p. 340.
 1920b. Angel, p. 615.
 1920a. Loveridge, p. 145.
 1934. Pitman, p. 304.
 1933. *Monopeltis granti transvaalensis* FitzSimons, Ann. Transvaal Mus., **15**, p. 277, figs. 3-5: Hope, between Nylstroom and Vaalwater, Waterberg district, Transvaal.
 1937b. Monard, pp. 65, 67.
 1934a. *Monopeltis mossambica* Cott, Proc. Zool. Soc. London, p. 155, figs. la-le: Caia, Mozambique.
 1931. *Monopeltis ellenbergeri* Monard (not of Angel), p. 97.
 1937b. *Monopeltis granti kuanyamarum* Monard, Arqu. Museu Bocage, **8**, pp. 65, 67: Mupanda, Angola.

¹ Almost certainly a misprint for 323, see footnote to genus.

Description. One large shield covering the head; a pair of occipitals; no preocular; ocular small, eye distinguishable; rostral small, tri-

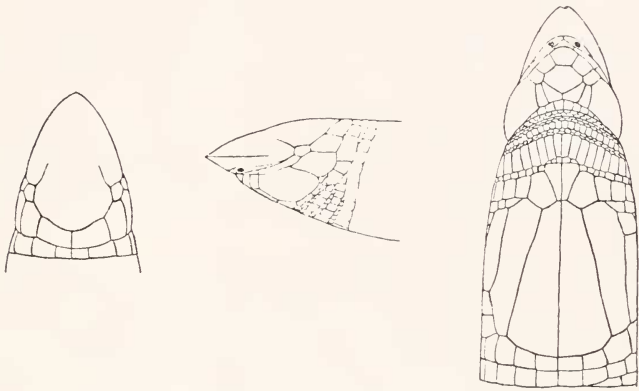


Fig. 52. *Dalophia pistillum* (Type of *granti* after Boulenger).

angular or subtriangular, not quite separating the nasals, not bordering the nostrils; nasals elongate, extending upwards to the ocular; 3 upper labials, second longest, third highest; mental moderate, sub-

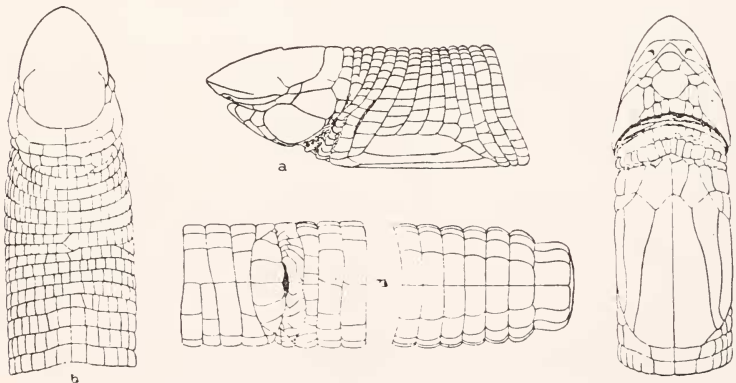


Fig. 53. *Dalophia pistillum* (Type of *mossambica* after Cott).

quadrangular or pentagonal; postmental large, heptagonal, not separating the inner pair of chin shields; 4 chin shields, not in contact with the second and third lower labials; 276-328 (276-299 in *mossambica*,

290-320 in *colobura*, 308 in *kuanyamarum*, 328 in *transvaalensis*) annuli on body, 24-29 (24-27 in *pistillum*, 25-26 in *kuanyamarum*, 25-28 in *colobura*, 29 in *transvaalensis*) on tail; 28-34 (18-20 + 10-14) segments in a midbody annulus, the 2 median ventral segments more than once and a half times as broad as long; 6 pectorals; 4-6 anals; 0-0 preanal pores.

Measurements. Total length 520 (477 + 43) mm.

Breeding. Two females, taken at Lumbo at end of August, each held four eggs, measuring 35 x 9 mm. and 35 x 10 mm. respectively. On September 20, a third specimen laid four eggs which measured 26 x 9, 30 x 9, 32 x 8 and 35 x 8 mm.

Enemies. At Lumbo on September 1, 2.15 p.m., with the sun beating fiercely, I found one of these lizards wriggling on the scorching sand, except for the last few inches which were still buried in the sand. On withdrawing these I found both tail and anal region smothered in driver ants (*Dorylus helvolus*), a fierce species which, however, detests light.

At 3 p.m. on September 20, under similar conditions, another amphisbaenid was found wriggling over the sand with a few ants tenaciously biting at its tail and a trail of them left to mark its course. Next morning a third specimen was brought to me. It was suffering from a severe haemorrhage in the intestinal region to which it succumbed during the day. Apparently it represented a third stage of victimization by these voracious ants.

Distribution. **Mozambique:** Beira; Caia; Lumbo. **Northern Rhodesia:** Barotseland: Sesheke; Lealui (Lialui) on Upper Zambesi River. **Transvaal:** Waterberg district: Hope. **South West Africa:** Grootfontein (*vide* Nieden). **Angola:** Kakindo (Caquindo); Kuvangu; Mupanda.

Remarks. I had already referred Monard's record of *ellenbergeri* to the synonymy of *pistillum* before his later paper (1937b, p. 67) reached me. In this paper he amends the identification to *transvaalensis*, itself a synonym of *pistillum* in my opinion. When adequate series are available eastern and western forms may prove to be recognizable though no signs of this appear from present records.

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